The Entropy of Suffering:

An Inquiry into the Consequences of the 4-Hour Rule for the Patient-Doctor Relationship in Australian Public Hospitals

by

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Statement of Authentication

The work presented in this thesis is, to the best of my knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

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ABBREVIATIONS AND GLOSSARY

4-Hour Rule: A colloquial reference to the National Emergency Access Target in which the Australian Government agreed to fund the states and territories over five years to achieve a 90% goal of all patients arriving in public hospital Emergency Departments being separated (home, ward, other facility) within four hours of presentation

A&E: Accident and Emergency. The acronym for Emergency Departments in the United Kingdom

Agency Staff: Professionals contracted to work in a health team on a casual basis, as opposed to full-time staff who are employees of the hospital

BMA: British Medical Association

Central Nervous System: The collection of neurones, interneurones and other supporting biological structures making up the organs of the brain and spinal cord

Complexity: The study of how structure and organisation of systems and elements within systems actualise the phenomena of order, emergence, self-organisation, autopiesis, and systemic resistance to maximum entropy

Critical Realism: Critical realism encompasses a set of philosophical explanations for the nature of reality including ontology, structure, the nature of causation, people and forms. It represents a broad alliance of social theorists and researchers developing a post-positivist social science. The paradigm offers coherence between scientific positivism (regularities, regression-based variables models, and law-like forms); and a weakly structuralist interpretivist turn favouring interpretation with a focus on hermeneutics and description[1]

CSR: Clinical Services Redesign. A process involving the reorganisation of clinical services across hospital departments, administration and other services to improve performance

Disposition: The exit outcome from an episode of care within an Emergency Department. It may be home, a hospital ward, or another facility

Dissipative Structure: A self-organising pattern of energy exchange between a non-linear non-equilibrium system with the surrounding environment in which the rate of entropy production within the system is proposed to be minimised

EBM: Evidence-based Medicine. An approach to the diagnosis and management of disease and ill-health, and to the organisation of the institutions and professions who practise biomedicine, based on an hierarchy of evidence in which the meta-analysis of randomised control trials in experimental research designs is the gold standard of evidence

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[1] M Archer et al, "What is Critical Realism?", *Perspectives: A Newsletter of the ASA Theory Section* Fall (23/12/2016), available at http://www.asatheory.org/current-newsletter-online/what-is-critical-realism .

ED: Emergency Department

Eidetic: A technical term in phenomenology used to denote an element or aspect of a phenomenon which is irreducible and contingent for the existence of the given phenomenon

Entropy: A physical quantity describing the quantum of energy in a system unavailable to do work. Conceptually extended to describe the difference between the total information about a system and the amount of useful information in the state of a system with which to describe the micro-state of all the elements of the system given the information present in the macro-state of the system

Fast Track: A clinical pathway in Emergency Departments that redirects low-acuity and uncomplicated patient presentations to alternative clinical treatment teams in order to increase the probabilities of achieving a 4-hour disposition target

Fractals: Mathematical quantities that proscribe the pattern of a physical system that is observed to arise from an arrangement of elements based on a single recurring mathematical relationship. Fractals in nature are affected by small variations in initial conditions that result in imperfect repetitions of the underlying constant relation

FTE: Full-Time Equivalent. A unit of measure in human resources that normalises data to a standard working week of 38-hours per worker

GDP: Gross Domestic Product

Gibbs Free Energy: The amount of energy available within a system to perform work at a constant temperature and pressure

GP: General Practitioner. A specialist in general and family medicine working in primary care

Grand Rounds: A multi-disciplinary professional development activity within a health-care facility in which challenging cases and important risk issues and safety are discussed in an open forum of health-care workers

Health District: The local divisions of health services funded by state and territory governments to deliver public hospital services in Australia

HETI: Health Education and Training Institute. A New South Wales (NSW) organisation responsible for aspects of professional development for doctors and other health-care workers in NSW

Homeostasis: A set of physical and physiological processes involving one or more biological systems that maintains a steady-state between a predefined minimum and maximum value. As an example, body temperature is maintained via homeostatic processes involving capillary blood flow in the skin, endocrine glands, respiration and nervous system monitoring processes coordinated in the brainstem to keep human body temperatures within a range of 36.1 to 37.2 degrees Celsius

ICE: A colloquial term for the illicit substance, methamphetamine

IOM: The Institute of Medicine is part of the National Academies of Sciences, Engineering, and Medicine, a not-for-profit non-government organisation in the United States providing national advice on biomedical sciences and research, and health policy

M & M Meeting: Morbidity and mortality meeting. A professional review meeting held within local units of health-care, such as a hospital department or treatment team, in which poor patient outcomes, unexpected outcomes, or deaths and injuries are critically reviewed within the confines of the treating team or departmental members

Melioration: A process of improvement over time

MJA: Medical Journal of Australia

NEAT: National Emergency Access Target. A reportable outcome as part of the Commonwealth of Australia National Health Reform Agreement (2011) with the states and territories of Australia

NHS: National Health Service. The United Kingdom's nationalised public health service

NHS Trust: A regional organisation that is funded to provide public health services including public hospital services and Emergency Department services in the United Kingdom

Node: An organising principle used in NVivo software for managing data from a qualitative inquiry in which individual data units that share meaning are grouped together

Non-linear: A system in which a change in output or arrangement of elements within the system is not proportional or additive to the change in input and in which disruptive or unanticipated changes may result

NPA: National Partnership Agreement on Improving Public Hospital Services (2011), which formed part of the Commonwealth of Australia National Health Reform Agreement (2011)

NSW: New South Wales. A state in the Commonwealth of Australia

Optimisation: The most efficient and effective state of a system at any one time

Peripheral Nervous System: The collection of neurones and other supporting biological structures making up nerves extending out from the brain and spinal cord

pH: Potential of Hydrogen. A unit of measure for the acidity or alkalinity of an aqueous solution

Phase-space: A multidimensional space in which every possible state of a system is represented. The space may be deterministic or probabilistic with respect to the evolution of states over time

Phase transition: When a complex system reorganises into a qualitatively different pattern with a sharp boundary between the two states

Phrase-space: A metaphorical representation in complexity theory of a phase-space that relates to the discursive dimensions of a system rather than its physical states

Physician/Medical Practitioner/Doctor: Interchangeable titles for a person registered with the Australian Health Practitioner Regulatory Authority as a medical practitioner or specialist medical practitioner

Power Laws: A relationship between two values in which a change in one value results in a proportional change in the other value according to a defined exponent

RCA: Root Cause Analysis. A formal investigative process used in hospitals and other health facilities to try and determine the factual antecedents contributing to serious harm or patient death. Outcomes of an RCA are intended to identify changes in practices and organisational policies and procedures to reduce the risk or recurrence

Reciprocal Relations: First described by Lars Onsager, the theorem explains the coupling of force and flow energies involving irreversible processes in a non-equilibrium system where the possibility of equilibrium exists

RMO: Resident Medical Officer. A junior doctor working in a public hospital

Second Law of Thermodynamics: One of four principles of thermodynamics, describing the quantum of energy in a physical system that is not available for work, called entropy, Which is always increasing over time

SEM: Structural Equation Modelling

Shannon Entropy: A value for the amount of information available in a system that predicts the system's micro-state. A concept in information theory that correlates with the measure of entropy in thermodynamics; if the amount of useful information increase then uncertainty (entropy) decreases and vice versa

Structure of Relations: A descriptive statement of the phenomenologically derived relationships of elements in a complex system

Theme: An organising principle for managing data from a qualitative inquiry in which data are grouped together because of an identifiable pattern of meaning or association across the data set

Thermodynamics: A body of scientific knowledge and research dealing with measurement of the quantum of different energies, including heat, in a physical system

TLC: Tender loving care. A colloquial term for the provision of emotional and psychological care and support in a hospital setting as opposed to technical interventions or biomedical procedures

UK: United Kingdom

US: United States

WA: Western Australia. A state in the Commonwealth of Australia

WHO: World Health Organisation

ABSTRACT

The Entropy of Suffering:

An Inquiry into the Consequences of the 4-Hour Rule for the Patient-Doctor Relationship in Australian Public Hospitals

As a medical practitioner, predominantly working in Australian public hospitals, I have always been interested in the factors that shape and influence my and my colleagues' performance in the practice of medicine. In 2011, the Australian Government instituted a range of reforms to the public health-care system, including some directed at improving access for patients to Emergency Departments, which had, over many years, become increasingly overwhelmed by the number and complexity of presentations. This included a target of four hours within which patients in Emergency Departments were to be discharged, admitted or transferred to alternative institutions. These reforms generated widespread strong emotional responses from medical and other health staff with whom I worked, and I was prompted to consider the origins of these powerful human reactions to the administrative intervention.

Emergency Departments are often described, derisively, as chaotic working environments. However, this epithet may instead be describing something quite profound about the ontological nature of hospitals and Emergency Departments — that they are, indeed, non-linear dynamical physical systems in which phenomena of complexity exist. Other human-centred interactional and transactional systems have been successfully examined from a complexity perspective, including economics and human physiology. Framing inquiry into Emergency Departments, and the humans who encounter each other within them, from a complexity perspective might also then prove useful in defining and characterising the complex and manifold relationships and interactions between people, technology and systemic organising principles.

This health services research evaluates the lived experience of four medical practitioners through the paradigm of phenomenological inquiry, as actors on a performance landscape of clinical encounters and as key sources of information about the structure and functions of that performance manifold. Inquiry into and analysis of these rich descriptive data yield strong inferences that non-linear dynamics are operating across scales — from the cellular to the organisational. The complexity perspective provides a unifying explanatory power for making sense of how energetic transactions and transformations between patients, health-care practitioners, technology and the hospital system unfold to result in the recovery from injury and trauma.

Specifically, literature on interoception suggests that human biological systems are exquisitely sensitive to changes in dynamic steady-states that might indicate increased entropy. This inquiry suggests that suffering is a phenomenological experience of sudden increases in entropy. An explanatory model in complexity, using the Second Law of Thermodynamics in open systems, suggests that entropy — that is, suffering — can be understood as being transferred and expelled from patient to doctor. Framing in this explanatory model would suggest that the patient-doctor relationship is a powerful systemic attractor in a dynamic system. Elaborating this construct of energetic dynamics further suggests that insertion of system controllers, such as time-based targets, can have profound non-linear effects on the function of these dynamics and, hence, the outcomes of these patient-doctor encounters.

The implications of this inquiry include a new and powerful reframing of the ontological characterisation of the practice of medicine in Emergency Departments in terms of non-linear open thermodynamic functions operating at distance from equilibrium. It recommends a more thoughtful consideration of human experiences such as suffering and its relief. Giving priority and visibility to suffering within health-care, a recrudescence of times past when technology in medicine was limited, may elucidate ways of practising that improve patient experiences and health outcomes.

Furthermore, the findings suggest that medical practitioners, health workers and administrators are called on to deeply consider embracing complex dynamics as problem-framing references, and to engage with methodologies that build better theories about the nature of phenomena under investigation. Rather than seeking to diminish or extinguish the complexities of Emergency Departments, researchers and practitioners might acknowledge and engage with the next wave of complexity-informed health-care research to better understand how and why health-care relieves suffering and restores human function.

Prologue

> Knowledge is, in the end, based on acknowledgement.
>
> — Ludwig Wittgenstein[2]

Expertise is typically the goal of any professional endeavour to which one dedicates one's life. But expertise in and of itself is not enough when one is engaged in a profession of 'doing'. When a 'doing' professional is called upon to initiate or take action, either on behalf of themselves or another, they are confronted with a metaphorical landscape that is very often impossible to grasp in its entirety from any one particular vantage.

If a vantage is taken from above, towards a bird's eye view, to increase the visualisation of the horizons of the landscape, one may lose the granularity of the terrain. Equally, it is foolhardy to consider only the space into which the next step is taken, without regard to direction or the local conditions, for one would readily end up lost or strike upon an otherwise avoidable obstacle.

In almost all conceivable professional activity, people benefit from the 'maps' and travel histories of the explorers and practitioners who have gone before, across the performance landscape of professional activity. These histories and lessons combine to provide a variation in perspective so that one might 'see' more completely the landscape in a collective understanding. 'Knowledge is, in the end, based on acknowledgement', as Wittgenstein observes. So, although each particular encounter upon a performance landscape will have its irreducible individual circumstances and originality, the professions are based on a general body of knowledge whose special privilege it is for the professional to be inducted into, and from which one can use the necessary tools of the trade to put that special knowledge into the service of others. A professional may take the general and apply it specifically, and from the specific they may then be able to generalise for the benefit of the wider population.

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[2] L Wittgenstein, *On Certainty* (New York: Harper and Row, 1972), 96.

The challenge of the professional-in-action upon a changing performance landscape has perhaps rarely been as vividly rendered as by Donald Schön, a professor of urban studies and education at Massachusetts Institute of Technology for over 30 years. The following excerpt, taken from Schön's contribution to *Praxiologies and the Philosophy of Economics,* paints a vivid and evocative picture of the task of the professional as master of both expertise and its application in a changeable world. Schön's work is, without doubt, one of the originating triggers for the wonderment that inspired this inquiry:

Similarly, the artistic processes by which practitioners sometimes make sense of unique cases, and the art they sometimes bring to everyday practice, do not meet the prevailing criteria of rigorous practice. Often, when a competent practitioner recognises in a maze of symptoms the pattern of a disease, constructs a basis for coherent design in the peculiarities of a building site, or discerns an understandable structure in a jumble of materials, he does something for which he cannot give a complete or even a reasonably accurate description.

Practitioners make judgments of quality for which they cannot state adequate criteria, display skills for which they cannot describe procedures or rules. By defining rigour only in terms of technical rationality, we exclude as non-rigorous much of what competent practitioners actually do, including the skillful performance of problem-setting and judgment on which technical problem-solving depends. Indeed, we exclude the most important components of competent practice.

In the varied topography of professional practice, there is a high, hard ground which overlooks a swamp. On the high ground, manageable problems lend themselves to solution through the use of research-based theory and technique. In the swampy lowlands, problems are messy and confusing and incapable of technical solution.

The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or to society at large, however great their technical interest may be, while in the swamp lie the problems of greatest human concern. The practitioner is confronted with a choice. Shall he/she etc remain on the high ground where he can solve relatively unimportant problems according to his standards of rigour, or shall he descend to the swamp of important problems and non-rigorous inquiry? Consider medicine, engineering, and agronomy, three of Glazer's major or near-major professions. In these fields, there are areas in which problems are clearly defined, goals are relatively fixed, and phenomena lend themselves to the categories of available theory and technique. Here, practitioners can function effectively as technical experts. But when one or more of these conditions is lacking, competent performance is no longer a matter of exclusively technical expertise.

Medical technologies like kidney dialysis or tomography have created demands which stretch the nation's willingness to invest in medical care. How should physicians behave? How should they try to influence or accommodate to health policy? Engineering solutions which seem powerful and elegant when judged from a relatively narrow perspective may have a wider range of consequences which degrade the environment, generate unacceptable risk, or put excessive demands on scarce resources. How should engineers take these factors into account in their actual designing? When agronomists recommend efficient methods of soil cultivation that favour the use of large land-holdings, they may determine the viability of the small family farms on which peasant economies depend. How should the practice of agronomy take such considerations into account?

These are not problems, properly speaking, but problematic situations from which problems must be constructed. If practitioners choose not to ignore them, they must approach them through kinds of inquiry which are, according to the dominant model of technical rationality, unrigorous.[3]

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[3] D Schön, "The Crisis of Professional Knowledge and the Pursuit of an Epistemology of Practice". In *Praxiologies and the philosophy of economics,* ed. J Auspitz, (Warsaw: Transaction Publishers, 1992), 171.

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CHAPTER 1: Introduction

1.1 Overview

Patients and health-care practitioners encounter each other in hospital Emergency Departments at all hours of the day and night, every day of the year, across Australia. Moments of loss and heartache unfold alongside triumph and banality, all in a dynamic and energetic environment within which humans and technology interact and engage to transform the experience of suffering towards its relief and the restoration of health and wellbeing.

With growing numbers of people accessing Emergency Departments, and with more complex health-care needs, inefficiency has affected the performance of the hospital health system and put patients at risk. The 4-Hour Rule was introduced, at first in Western Australia and later across all Australian public hospitals, to address critical issues related to access block for people in need of emergency care, and for those already in departments needing to be admitted to specialist wards, discharged home, or transferred to other care facilities. Its introduction radically affected the behaviour of professionals within Emergency Departments and the hospital generally. These effects are the central interest of this inquiry: How do administrative interventions such as the 4-Hour Rule affect the perceptions the Emergency Department doctors have of their relationships with patients? How doctors make sense of their performance in the patient-doctor relationship will be shown to have important implications for the Emergency Department's performance as a whole.

Health services evaluations on the impact of the 4-Hour Rule, more formally known as the National Emergency Access Target, is a field of inquiry somewhat neglected in the published literature in Australia. This work presents a phenomenological lifeworld study of the lived experience of the medical practitioner and the phenomena of clinical encounters, and the effects of the 4-Hour Rule on this lived experience. The work was inspired by my experiences, working alongside patients and doctors in Emergency Departments, that gathered force enough to create a desire to explore the hidden knowledge and meaning that intuited experience can often be located within. The burning questions of 'Why?' and 'How?' what I witnessed in the dynamic responses to the 4-Hour Rule of whole groups of professionals became a fruitful intellectual space within which to engage systematically in an enterprise of discovery.

In this chapter an overview of the organisation and content of this thesis is presented as a précis to the rationale, methodology, findings and discussions arising from the phenomenological inquiry into the nature of the patient-doctor relationship and doctors' views about the impact of complex interventions such as the National Emergency Access Target in hospital settings. It begins with a biographical introduction to the stimulus for the research, highlighting some of my experiences with respect to the introduction of the 4-Hour Rule. Subsequent introductory material establishes the antecedents to the implementation of a time-based performance target in the Australian and international context and introduces the challenges of making sense of how complex interventions such as the National Emergency Access Target affect the systems in which the targets are operating.

A brief summary of the findings and a discussion of implications, limitations, and directions for future research aim to orientate the reader to the major themes of the research, and is concluded with an overview of each chapter and its content.

1.2 Origins of the research question

That I was about to lose consciousness registered provocatively through my autonomic nervous system as a wave of heat, diaphoretic blurred vision, and sense of impending doom. The stimulus for the soon-to-be-realised unedifying event had occurred moments earlier, as a patient winced in discomfort while a surgeon — middle-aged and wildly experienced — passed a suture needle through the patient's forehead skin to close a wound created by the excision of a small skin cancer. Apparently the local anaesthetic had incompletely penetrated the field of operation, a matter quickly redressed with a small additional injection. But it was too late for me.

The moment triggered a stunning realisation that would haunt me in decades to come — my actions as a doctor had the potential to cause suffering to the one I was supposed to heal. This was not, of course, the thought in my head as I collapsed to the floor. I had hoped only to have enough time to escape the operating room to find a seat and put my head between my legs. Alas. *Thump!*

I would avoid understanding why I fainted for many years, preferring instead to demur and cloak the experience as a function of being overly tired or dehydrated from a busy week as a 16-year-old doing work experience with a surgeon. As history attests, the experience did not deter me from pursuing that dream, and I graduated eight years later

from a most gratifying medical degree in Victoria, Australia, which would set me along a path of profound fulfilment. However, the experience that day in the sanctum of the surgical theatre was to be an iconic indicator of the early years of my medical career. Like so many of my colleagues, I had a particularly severe form of self-criticism and self-surveillance of my potential to harm my patients. As my medical experience and acumen improved, so too was I more prepared to reflect critically on how I contributed to the whole world of phenomena in which suffering patients, often not of their own true volition, were in search of relief and meaning while I, most inadequate, was their guide and protector.

My initial assuredness of the ability of my empirical scientific profession to answer the questions I needed answered, to serve my patients with compassion and effectiveness, continually encountered flashes of scepticism and mild mocking in the form of advice and commentary from my superiors. Though infrequent, such encounters with my peers spurred me to read the scientific literature more deeply and widely and search out the 'right' answers to difficult clinical situations. For a number of years the illusion held. But it would transpire that the illusion was sustained not by my grasp of scientific knowledge, but by the peculiar and powerful lens through which I had been observing my professional world.

That lens would fracture and disintegrate in a concentrated series of tutorials and clinical moments occurring in a brief 12 months of practice that would establish the basis of why the clinical encounter, and my role in it, became a world of fascination and wonder for me. I would learn that much of the power of healing could be found in *holding the uncertainty* of the clinical moment in partnership and transparency with my patient. I would learn that to say 'I don't know' did not convey to my patient the idea that 'I don't care'. I would discover that a patient's trust was profound and enduring and formed the seed around which all other action could crystallise and take form. I would learn that small moments, sometimes insignificant and apparently ineffective gestures, of alliance and camaraderie had the potential for long-term and enduring effects on the trajectories of my patients' lives.

1.2.1 First encounters with the 4-Hour Rule

When the first grumblings and frustrations began emanating from the collective voice of my colleagues at Grand Rounds and Morbidity and Mortality meetings about the new 4-Hour Rule, my initial response was to revert to the literature to divine why and how the

rule had been established and what it was intended to achieve. Within a year or two it was apparent that whatever benefits were intended, the overwhelming anecdotal experience of my colleagues, particularly junior doctors working in busy tertiary hospitals in urban settings, revealed an hostility towards both the clinical rationale for the targets and, more particularly, the major shift in power and influence the targets had generated across hospital hierarchies. There was an overwhelming sense of a loss of control — of workflow, workloads, work priorities and, at its core, what was 'right' for 'the patient'. Stories emerged of hospital administrators overriding the clinical decisions of experienced surgeons and physicians to admit and discharge patients, in order 'to meet the targets'.

Given I had come to understand that many of my peers shared my tendency towards self-criticism and doubt about the quality of our clinical care, I was alarmed at the apparent assault on the physician's sense of control over their care of patients and how this could possibly exist in such high internal loci of control among the profession. It was a recipe for disaster with diabolical consequences if the apparent benefits of improved patient access to Emergency Departments were to come at the cost of patients and doctors losing confidence that they were still the ones driving decisions about the right choices in care.

What transpired was rather more insidious. The rhetorical position was that no target substituted for a clinician's considered and professional view about the right clinical choices for the patient. Doctors were constantly reassured that if a patient needed more time in the Emergency Department then it would be the overriding consideration. In practice, patients would be moved, discharged or admitted, by delegated teams of 'patient flow coordinators' with the power to invoke the administrative hierarchy to overrule individual clinical decisions based on the hospital's 'overall needs'. Doctors would leave specific management instructions for their patients in the Emergency Department or on the wards, only to find the next shift or the next day that alternative decisions were made by a different set of doctors and administrators based on 'evolving clinical contexts' and 'bed block'.

At times I would find myself in heated arguments with nursing and medical colleagues in the Emergency Department that a patient was not fit to go home without further investigations, but would neither, on balance, benefit from an admission. The most appropriate course of action was to remain in the Emergency Department until the work-

up was complete and then the patient could probably be safely discharged. Their response invariably was that patients across the unit were about to 'breach' the 4-Hour Rule and that my patient should go to the available bed in a ward to allow for other patients to enter the department, and for my patient to avoid 'breaching'.

It will become apparent from the interviews in the fieldwork presented in this thesis, and from the literature review, that such professional encounters were not uncommon in public hospital Emergency Departments around Australia. I began to wonder under what pretext this clinical angst was supposed to improve the lives of the patients we served. It was clear that the impacts of the target was felt across hospital activities and patient journeys. During the course of earlier research work, predating this thesis, I discovered among thousands of junior doctors and medical experts that despite pockets of success, the profession as a whole was reacting angrily, and impotently, against what it perceived as a real and present danger to the decisions they were making about their patients, for whom they genuinely cared. Given how much we as professionals were already collectively concerned about our responsibility for the outcomes of the clinical choices we make with our patients, how could we reconcile such external loci of controls with our sense of individual responsibility?

A loss of a sense of power is typically an uncomfortable and often poorly managed phenomenon of professionals' lives. Were this the predominant basis for the medical profession's anger at the 'imposition' of performance controls by external agencies, then there would be little need for deeper exploration. But as an 'insider' I benefited from my peers candid communication which suggested otherwise. What I saw in the years following the introduction of the 4-Hour Rule was genuine suffering underlying anger and frustration: the suffering of my colleagues that they could not do what they 'knew' in their hearts and minds was the 'right thing' by their patients. Something had changed in their ability to relate to the stories of their individual patients. Of course for some, that ability to relate had probably never really been there, obscured by a multitude of professional masks and obfuscations. But for the vast majority of those whom I encountered, this was not the case; rather, they had lost something particular and essential to their ability to *hold uncertainty* — a sense of safety about the context in which they had to make difficult and risky decisions on behalf of a person who, most likely, was enduring one of the most frightening days of their lives. These doctors' experiences seemed worth trying to understand more completely.

1.3 Background to the National Emergency Access Target

The impetus to try to improve patient access to hospital and reduce emergency room overcrowding arose from evidence in Australian public hospitals in 2006 that such factors increased hospital mortality rates and adversely affected patient care.[1] [2] Richardson and Spivrulis each had their papers published in the same edition of the *Medical Journal of Australia* (MJA), in consecutive pages dedicated to the question of Emergency Department overcrowding. Both were retrospective cohort designs set in Emergency Departments in Canberra and Western Australia (WA), respectively. The underlying intention of the MJA's editorial board may be gleaned from the editorial prelude to both articles in which the editor argues that the "findings now make access block a patient safety issue for which all health care workers and the community must be responsible. It is incumbent on governments and administrators to prevent overcrowding by improving management of the health care system and, where necessary, providing increased resources".[3] In this editorial, Cameron goes on the proclaim that "[a]n overcrowded hospital should now be regarded as an unsafe hospital".

It can be reasonably assumed that these alarming conclusions in Australia's pre-eminent medical journal were intended to stimulate change. The papers, and the MJA through its editorial, all called for increased resources and better matching of resources to demand; more prevention; improved aged care management; and better access to general practitioners (GPs), as some of the solutions to overcrowding. None proposed the introduction of time-based targets. It was in WA in 2009 that time-based targets became part of a health department strategy to respond to 'bed block' and Emergency Department overcrowding.

WA's decision followed a review of National Health Service (NHS) districts in 2008 by the WA Ministry for Health. A delegation of clinicians from WA hospitals examined the critical factors of success in the NHS to address challenges of unplanned patient care in UK hospitals and Emergency Departments. The delegation concluded that Clinical Service Redesign (CSR) associated with the NHS implementation of a 4-Hour Rule in 2000 was one of the necessary lessons to be adapted for the Australian context.[4]

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[1] D Richardson, "Increase in Patient Mortality at 10 Days Associated with Emergency Department Overcrowding", *MJA* 184, no. 5 (2006): 213-216.

[2] P Sprivulis, "The Association Between Hospital Overcrowding and Mortality Among Patients Admitted via Western Australian Emergency Departments", *MJA* 184, no. 5 (2006): 208-212.

[3] P Cameron, "Hospital Overcrowding: A Threat To Patient Safety?", *MJA* 184, no. 5 (2006): 203-204.

[4] Government of Western Australia, *WA Health Emergency Demand UK Tour* (Perth: Department of Health, 2009).

Following the WA experience, in 2011, a National Partnership Agreement (NPA) between the Commonwealth of Australia and the states and territories was signed under the then Prime Minister, Julia Gillard, that committed to a 'National Partnership Agreement on Improving Public Hospital Services'.[5] The primary objective of the agreement, which was tied to significant increases in Commonwealth distribution of funds for health, was "to drive major improvements in public hospital service delivery and better health outcomes for Australians".[6] The agreement set out four outputs on which performance would be measured, including "a higher proportion of ED patients to either physically leave the ED for admission to hospital, be referred to another hospital for treatment, or be discharged within four hours."[7]

This NPA indicator is known as the National Emergency Access Target (NEAT) and it was stipulated within the agreement that by December 2015 all public hospitals should be achieving a 90% benchmark of all presentations to Emergency Departments being discharged, admitted or transferred within four hours.[8] A total of $750 million was allocated to the NEAT with explicit financial incentives made available to states and territories, comprising $300 million to 'facilitate' attaining targets, and a further "$200 million in reward funding for four years commencing 2012-13".[9] [10]

In 2013-14, all-of-government funding (states, territories and Commonwealth) for public hospital services was around $42 billion.[11] Hence, NEAT funding represented a modest 0.5% of total funding on average per year for the duration of the NPA, contingent as it was on performance benchmarks.

In the era of evidence-based medical practice, clinician 'buy-in' for the benefits of NEAT would require evidence that, despite the challenges of service redesign across hospitals, time-based targets could achieve patient benefits. It was again the MJA in 2012 that assumed responsibility for publishing the early data on outcomes, again from WA, which was now at least two years ahead of the rest of the nation in implementing the NEAT.

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[5] Commonwealth of Australia, *The National Health Reform Agreement* (Canberra: Australian Government, 2011).

[6] ibid. 4.

[7] ibid. 4.

[8] ibid. 35.

[9] Freedom of Information Request, *Emergency Departments*, Commonwealth Department of Health, (2013).

[10] Commonwealth of Australia, *The National Health Reform Agreement*, 30.

[11] Australian Institute of Health and Welfare, *Health Expenditure Australia 2013-14: Analysis By Sector* (Canberra: Australian Government, 2015), 37.

The MJA editor summarised the original research published by the journal in February 2012 as cautiously indicative of an *association* between all-cause mortality reductions in hospital where hospitals achieved significantly high NEAT targets of between 85% and 95%.[12] This was tempered by an analysis of the research, immediately following in the pages after the original paper, that suggested that although significant, the paper was lacking in rigour with respect to showing causation between lowered access block and reduced mortality, due to unmatched controls, lack of out-of-hospital mortality figures, and potential biases from changed admission patterns towards less sick patients.[13]

What was a clinician, reading this journal in 2012, to make of this juxtaposition? On the one hand were the daily lived experiences of difficulty and frustration, of changing workflows and burgeoning workloads, ostensibly to support improved target achievement, and on the other hand were some significant but far from conclusive localised data suggesting a modest but real possibility of reduced mortality.

Published in 2012, the Stokes Review of WA's implementation of time-based targets was prompted by widespread media attention towards enormous medical practitioner frustration and anger about the impact of service redesign and time-based targets. Impacts that were identified included compromised patient care, adversely impacted training, bullying of junior medical staff and unsafe working hours, and compromised patient privacy and dignity from 'corridor parking' of beds awaiting transfer to hospital wards.[14] This potential for widespread clinical disruption and dissatisfaction was already well understood and foreshadowed in Europe, in jurisdictions that had moved to include target-based strategies for health-care and where such targets did not achieve widespread investment and ownership from clinicians.[15]

The Stokes Review acknowledged the ambitiousness of the implementation of emergency access targets in 2009 in WA (particularly mirroring the UK target of 98%) and that service redesign and other critical factors were occurring in a significantly different funding environment than that of the UK, where public funding for health

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[12] A Katelaris, "The 4-Hour Rule: Does Lowering the Temperature Treat the System?", *MJA* 196, no. 2 (2012): 87.

[13] D Richardson, "Emergency Department Targets: A Watershed for Outcomes Research?", *MJA* 196, no. 2 (2012): 126-127.

[14] B Stokes, *Four Hour Rule Program Progress and Issues Review*, (Perth: Department of Health WA, 2011), 19-20.

[15] M Wismar et al, *Health Targets In Europe: Learning From Experience*, (Copenhagen: WHO on behalf of The European Observatory on Health Systems and Policies, 2008), 48.

essentially doubled in the first four years of the implementation of UK targets.[16] This compared with a modest one-off $75 million investment in WA, in an environment of general government spending restraint.

By 2015-16, no state or territory had achieved the agreed 90% benchmark, with an average wait percentage of 73%.[17] However, averages hide some interesting statistics. For patients presenting with non-urgent presentations, many jurisdictions achieved or surpassed the 90% targets, and for patients who were not admitted to hospital, the 4-hour target was achieved on average for 83% of patients.[18]

In 2016, at the end of the National Partnership Agreement term, Silk undertook an analysis of the impact of NEAT in achieving its stated objectives and found that of 20 reports published on NEAT and its impact in Australia since 2010, the consensus findings included a majority of hospitals failing to achieve targets despite overall increases towards the agreed benchmarks; only three out of hundreds of public hospitals identifying reduced all-cause mortality but without a causal link; a surge in the use of extended care environments attached to Emergency Departments that constitute an admission to hospital; disproportionate increases in hospital admissions to other wards; at least one confirmed instance of organisational data manipulation of wait-times to achieve targets at the cost of care; and anecdotal reports of disproportionate increases in activity in the last half-hour of the NEAT window.[19]

Silk's findings correlate with additional contemporaneous research by Staib and others in 2016, which found that no public hospital in Australia, other than small rural hospitals, had achieved consistent NEAT ratios above 85%.[20][21] As well as failing to meet the NPA benchmarks during the lifetime of the agreement, there were additional conflicting data that underscored uncertainty about the benefits which were supposed to flow on to patients — in particular, the evidence that mortality rates improved. One of the first

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[16] Stokes, *Four Hour Rule Program Progress and Issues Review*, 14-15.

[17] Australian Institute of Health and Welfare, *Emergency Department Care 2016-17 Australian Hospital Statistics*, *Health Services Series No. 80. Cat. No. Hse 194* (Canberra: Australian Government, 2017), 64-69.

[18] Australian Institute of Health and Welfare, *Emergency Department Care 2015-16 Australian Hospital Statistics*, *Health Services Series No. 72. Cat. No. Hse 182* (Canberra: Australian Government, 2016), 62-66.

[19] K Silk, "The National Emergency Access Target: Aiming for the Target but What About the Goal?", Deeble Institute Issues Brief (2016).

[20] C Sullivan et al, "The National Emergency Access Target (NEAT) and the 4-Hour Rule: Time to Review the Target", *MJA* 204, no. 9 (2016): 354.

[21] A Staib, "Report on the 4-H Rule and National Emergency Access Target (NEAT) in Australia: Time to Review", *Aust Health Rev* 40, no. 3 (2016): 319-323.

alarms was raised in the UK, in which time-based targets had been operating for well over a decade. A Mid-Staffordshire report revealed an appalling increase of avoidable patient harms being done following the introduction of high percentage targets and the pursuit of achieving those targets as a priority over patient care.[22] In addition, this inquiry found that the overall ability to monitor and respond to quality issues within hospitals was hampered by "crude" measurement tools that amounted to little more than "financial control and a handful of access targets" completely incapable of detecting serious deviations in quality for individual patients or even groups of patients.[23]

Medical practice is not, however, just about evidence and outcomes. The question that has remained unanswered throughout the assessment of NEAT and hospital performance, despite the clear anecdotal evidence of medical professionals, has been how administrative interventions such as the 4-Hour Rule affect physicians and their perceptions of their relationships with their patients. Given a doctor's inimitable role in the patient-doctor relationship, and the central importance of this relationship to decisions about health interventions and care, I was curious about how a doctor's perceptions influence the dynamics of that relationship and the function of the patient-doctor relationship on how hospitals get work done.

1.4 Performance as a manifold phenomenon

Making better sense of the relationship between what a performance indicator such as the 4-Hour Rule measures in the reality of an Emergency Department, and how a time-target might affect the performance of medical practitioners and the impact of this performance on patient outcomes, requires extirpation of the assumptions of linear cause and effect often found in the typical consideration of such relationships. This process of challenging prevailing assumptions is aided by critical reflection on the ontological and epistemological foundations of inquiry. To this end, a critical realist paradigm informs the characterisation of the worldview of the inquiry. Explanatory descriptions and models are informed by complexity theory and consequently change the way in which the relationships between actors, mechanisms and outcomes are thought to be arranged or organised.

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[22] R Francis (Chair), *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry* (London: The Controller of Her Majesty's Stationery Office, 2013).

[23] ibid. 48.

A transformative model will emerge in which Newtonian cause and effect on a Cartesian plane is abandoned in preference for a worldview in which phenomena are dimensional and time-evolution dependent. This is a world of interacting manifolds evolving across phase-spaces that operate in complex, non-linear, and at times uncertain or chaos-like ways.

As an example, how well a medical practitioner performs their role in the patient-doctor relationship is an outcome encompassing a vast array of internal and external factors. My formative experiences working in the medical professional indemnity insurance industry exposed me to considerable data on how individual medical practitioner performance could affect patient care. It was apparent from the complaints and notifications within the indemnity industry that not all doctors were created equal in their capacity to engender trust and familiarity with patients, nor even to distil clinical problems and apply remedies. Furthermore, the same doctors could perform with a wide variance of success, based on dynamic factors within the same work environments. Empirical data supports this anecdote in the Australian context. The Garling Report in 2008, a comprehensive review of acute care services in NSW, confirms that there are wide variations in care and treatment as a function of major systemic and hierarchical issues across the whole of hospital-based health-care.[24]

Poor outcomes involving clinician errors are often avoidable in a system that is equipped to recognise and respond to such errors, and is designed in anticipation of the antecedents to common and catastrophic individual and systemic failures placing patients in harm's way.[25] In the health-care setting these factors interact and are mediated through an iconic encounter — the patient-doctor relationship.

Many of these internal and external factors have been well studied in the biomedical paradigm. Internal factors include a doctor's personality which interact with, and are influenced by, the world around them. It is increasingly understood that personality dispositions with moderate mediating effects on outcomes within high-risk environments,

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[24] P Garling, *Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals*, (Sydney: State of NSW, 2008).

[25] J Reason, *The Human Contribution: Unsafe Acts, Accidents, and Heroic Recoveries* (England: Ashgate Publishing, 2008), 262-263.

such as health-care, can have direct effects on patient outcomes.[26] [27] These factors also mediate how doctors make sense of the world around them and their place in it, influencing satisfaction levels and rates of errors to a degree that can impact the local medical system in which they work. [28] [29]

How these personality factors intermediate perception of, and response to, stressors in the internal and external environment is a particular focus of research, given its effects on predisposing to, or protecting against, individual practitioner mental illness, burnout and decision-making errors.[30] As Spickard et al observe, "doing no harm, begins with one's self".[31]

Expertise and success do not depend on perfected personality, but they do rely on a practitioner's ability to observe themselves and their performance in real-time and adapt. As presented in the *Prologue* to this thesis, Schön identifies one of the unique characteristics of an expert professional as the ability to perform effective problem-setting in 'problematic situations'.[32] That is, the ability to find the boundaries and elements of a problematic situation from which to draw out problems. He contends that,

[p]roblems are interconnected, environments are turbulent, and the future is indeterminate just in so far as managers can shape it by their actions. What is called for, under these conditions, is not only the analytic techniques which have been traditional in operations research, but the active, synthetic skill of designing a desirable future and inventing ways of bringing it about.[33]

Expertise is not just about 'problem solving' which requires only adequate technical training. The expert is required to be able to monitor their performance in two phases, reflection-in-action and reflection-on-action, with the goal of navigating a useful solution to their frequent "[embroilment] in conflicts of values, goals, purposes and interests"

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[26] M Hojat, J Erdmann, and J Gonnella, "Personality Assessments and Outcomes in Medical Education and the Practice of Medicine: Amee Guide No. 79", *Medical Teacher* 35, no. 7 (2013): e1267-e1301.

[27] D Cohen and M Rhydderch, "Measuring a Doctor's Performance: Personality, Health and Wellbeing", *Occ Med* 57, no. 6 (2006): 439-440.

[28] A Spickard, S Gabbe and J Christensen, "Mid-Career Burnout in Generalist and Specialist Physicians", *JAMA* 288, no. 12 (2002): 1447-1450.

[29] E Williams and A Skinner, "Outcomes of Physician Job Satisfaction: A Narrative Review, Implications, and Directions for Future Research", *Health Care Manage Rev* 28, no. 2 (2003): 119-140.

[30] IC McManus et al, "Stress, Burnout, and Doctors' Attitudes to Work are Determined by Personality and Learning Style: A Twelve Year Longitudinal Study of UK Medical Graduates", *BMC Medicine* 2, (2004): 29

[31] Spickard et al, "Mid-career Burnout", 1447-1450.

[32] Schön, *The Crisis Of Professional Knowledge,* 171.

[33] D Schön, *The Reflective Practitioner: How Professionals Think In Action (*Basic Books, 1984), 16.

within a changing and indeterminate landscape of professional performance.[34] The difficulty of this task of navigation in uncertain trajectories is evidenced by the many researchers who have inquired into the complex and often obscured relationships between initial conditions of a health-care encounter, and its final destination in health and human outcomes.[35] [36] [37]

These trajectories are tightly bound to a modern paradox of hospital health-care — that doctors must practise according to the evidence of research based on the 'average patient' by applying that evidence to the unique and unquantified individual patient before them. This tension is characterised as a dialectic between the 'commandmentism' of evidence-based medicine (EBM) and the 'last three feet of communication' in which complex and even contradictory ethical tensions admix between patient and doctor, out of which action must be taken. It will be contended that many health-care dialogues inadvertently obscure and conflate discrete objects that may be more or less 'health' or 'care' and oftentimes not both. As a result, what is measured and how it relates to the nature of the phenomena against which it is applied may bear little correlation over time.

1.5 Administrative interventions are 'complex interventions'

This inquiry is located within health services research, a field of inquiry dedicated to the study of the social, political and economic factors that shape and determine the structures, processes and goals of health services. Health services research prioritises the importance of ensuring that quality health services are delivering equitable and efficient access for citizens, informed by and informing the decision-makers across diverse stakeholders who are accountable to each other. Measuring and evaluating the impact of health services policy and the outcomes of health services activity are central to the purpose of health services research. Recognising the complexity of administrative interventions, both as a function of the intended consequence and as a function of the system in which they are effecting change, means that evaluation of those interventions must be capable of engaging with this complexity, rather than trying to simplify it.

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[34] ibid. 17.

[35] S Durning, "Redefining Context in the Clinical Encounter: Implications for Research and Training in Medical Education", *Med Ed* 85 (2010): 894-901.

[36] P Han, W Klein, and N Arora, "Varieties of Uncertainty in Health Care: A Conceptual Taxonomy", *Med Decis Making* 31, no. 6 (2011): 828-838.

[37] C Adamson, "Existential and Clinical Uncertainty in the Medical Encounter: an Idiographic Account of an Illness Trajectory Defined by Inflammatory Bowel Disease and Avascular Necrosis", *Sociology of Health and Illness* 19, no. 2 (1997): 133-159.

The World Health Organization (WHO) has published guidelines that recommend the use of more holistic research approaches to measuring the effect of administrative interventions.[38] This inquiry engages with that challenge, using complexity theory as the discursive apparatus with which to characterise and hypothesise the structure of relations, in a critical realist ontology, that form essential elements of the trajectories of patient-doctor relationships across the performance space of the Emergency Department.

1.6 Theory-building methodologies

The literature review establishes the research paradigm within which the inquiry takes place: a critical realist perspective in which a complexity approach uncovers probabilistic hierarchies that share certain phenomena across scales and time. In this worldview, problems are not discrete entities, but instead arise from complex competing and even chaotic interactions that requires an ability for problem-framing before a solution or solutions might be found. The review highlights arguments for the characterisation of hospital Emergency Departments as non-linear dynamic environments in which cause and effect are non-linear and non-deterministic. As a consequence, research suggests that quantitative models for hypothesis testing can break down with a lack of *a priori* data, and alternative methodologies may be required to support health services evaluation of administrative interventions.

The methodology chapter begins to unpack the consequences of evaluating complex interventions in complex systems, where alternative theory-building methodologies need to be deployed. Using a descriptive phenomenological methodology suitable for theory-building exploratory inquiry, four participants were interviewed, and the fieldwork delivers fascinating and deeply insightful commentary about their lived experience, from which the phenomenological analysis draws a range of anticipated and new perspectives on physicians' perceptions of the patient-doctor relationship, administrative intervention, and public hospital productivity. Following traditional descriptive phenomenological epoché and bracketing for inductive content analysis of transcripts, a summative analysis of the data offers modest triangulation of thematic saturation, using the advantages of computer-assisted transcript analysis.

From the naïve descriptions by participants, phenomenological techniques, including epoché and imaginative variations, are manifested across the complete data set in an

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[38] D de Savigny and A Taghreed, eds., *Systems Thinking for Health Systems Strengthening* (France: Alliance for Health Policy and System Research, WHO, 2009), 19.

attempt to crystallise some of the essences of the clinical encounter and their context in the lifeworld of a clinical encounter. Through illumination of these essences, born from the words of its practitioners, a range of possibilities is discovered for new understandings and approaches to the management of health-care systems and clinical encounters, with the goal of relieving the suffering of the patient and doctor, thus promoting a health-care system that can provide the necessary health advances it is funded to ensure, delivered with the care and compassion that true human suffering ought to elicit.

Many threads and lines of possibility present through this approach, and an overarching framework is required to help contain and organise the work. This is not an uncommon phenomenon of qualitative research, and in this inquiry I turn to Morse to assist with presenting the work in a manner that can be more readily assimilated by health-care professionals used to quantitative research.[39]

Thematically, the analysis rests on two major propositions that arrive in the phenomenological inquiry:

1. Suffering is an expression of increased entropy in the human organism which a person will seek to avoid or resolve.

2. Humans have the ability to intentionally recruit and coordinate non-spontaneous thermodynamic energies to lower entropy.

These propositions are fleshed out in considerable detail through the phenomenological wonderment of epoché, carefully and reiteratively cast into and around the clinical encounter and empirical knowledge from diverse fields of physics, medicine, economics, organisational psychology and the arts.

1.7 Results and discussion

Summative analysis of the transcript texts suggests that despite the differences in gender, age, medical speciality and stage of training, there is considerable overall homogeneity of responses and concepts presented in the interviews. However, some modest but significant difference might exist between doctors who are trainees compared with those who are consultants.

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[39] J Morse, "Insight, Inference, Evidence, and Verification: Creating a Legitimate Discipline [Keynote Address]", *Int J Qual Methods* 5, no. 1 (2006): 6

The naïve experiences and their expressions in the lifeworld of participants is presented in the First Order Constructs of the empirical phenomenological method. The purpose of these constructs is to give shape and content to the units of meaning expressed by participants in relation to their phenomenological experience. Constructs are evidenced directly from the content of the interview transcripts through the phenomenological act of 'bracketing', in which foreknowledge and observer judgements are held away from encounter with the data. The Constructs aim to represent the authentic experience of the participants.

In total, nine distinct Constructs emerge from the phenomenological process, and each is explored and evidenced in detail. Constructs range from practical issues for doctors in being able to correctly place a patient within the biomedical context of diagnosis and management, to profound questions of the ethical context of human relationships involving high degrees of trust and ultimately risk of diabolical outcomes for patient and doctor alike. There is recognition of the strong influence that individual practitioner performance has on the overall success and productivity of Emergency Departments and, by extension, hospital-based health-care.

The empirical phenomenology method next requires a synthetic and integrative 'imaginative variation' around the First Order Constructs to create Second Order Constructs. Second Order Constructs may represent a synthesis or reimagining of First Order Constructs, or they may arise from the integration of First Order Constructs with other empirical knowledge. Second Order Constructs were realised within the epoché and bracketing of descriptive phenomenology, and arose not 'bit by bit', but instead expressed an 'idea' contained or arising from the whole — the research, the literature, my self, my work, and other evocations — and within its 'part', expressing that whole. These processes and procedures produced eight Second Order Constructs, ranging in content from the characterisation of suffering as a final common pathway for the experience of increased entropy in the human organism, to the implications of the inimitability of each clinical encounter and its relationship to the Zen idea of 一期一会 (Ichi-go Ichi-e), once-in-a-lifetime encounters of profound significance.

Unlike the First Order Constructs, the imaginative variations and evidences draw from a wide range of sources to inform the Second Order Constructs. These sources include the deep explanatory power of thermodynamics and the Second Law in the work of Onsager and Prigogine; the power-laws of nature and fractals; Lévinas and the ethics of

responsibility; Schrödinger's prescient conjectures on the relationship between information and entropy; the expression of equipoise and gnosis in complex systems; insights from Zen philosophy on the inimitability of encounter; the power and vulnerability of trust in human relations and institutions; and the profound influence of language, dialogue and argument in how a patient and doctor make meaning of their encounters.

Each Second Order Construct is tested for its durability as an eidetic, essential element of a clinical encounter, and it will emerge that not all Second Order Constructs appear to fulfil this possibility.

1.8 Conclusions and directions for future research

To be sure, this inquiry it is a dizzying range of science, art and language, traversed in the phenomenological context. But it ensures a solid basis on which to draw inferences about the power and influences of a clinical encounter, the physician's role, and the forces exerted by the performance landscape on which the actors of health-care engage.

Research conclusions are summarised according to the original challenge set by Morse regarding rigorous qualitative research outputs made accessible for the more quantitatively-informed medical reader. The question of how administrative interventions like the 4-Hour Rule impact on the dynamics of the patient-doctor relationship is resolved with reference to the insights, inference and evidence that the phenomenological approach has elucidated from the research data and its relationship to the literature. The conclusions include a demonstration of the success of non-linear dynamics as a model for hospital Emergency Department performance landscapes and, thus, the usefulness of complexity-informed approaches to health services research — a so-called 'fifth wave' approach to public health advocated by Hanlon et al and others.[40][41]

This points to a key direction for future research to investigate how phenomenological data are used to inform individual practice, but also their use in framing public policy development. Phenomenological inquiry using the methods of empirical phenomenology may assist in bridging the goals of evidence-informed health policy and design development, and better approximation of the reality of the function of health-

[40] P Hanlon et al, "Making the Case for a 'Fifth Wave' in Public Health", *Public Health* 125 (2011): 30-36.

[41] S Davies et al, "For Debate: A New Wave in Public Health Improvement", *The Lancet* 384, no. 9957 (2014): 1889-1895.

care systems, rather than models based on ontological assumptions that may bear little alignment with the complex reality of health-care structures of relations.

This inquiry also suggests that efforts in health-care policy might be supported and further advanced with an understanding of the role of suffering in patient and physician care and in the performance of hospital systems.

The implications of this inquiry include a new and powerful reframing of the ontological characterisation of the practice of medicine in Emergency Departments in terms of a critical realist paradigm incorporating non-linear open system thermodynamic functions operating in steady-state at distance from equilibrium. In this framing, the entropic human experience of suffering and its relief are given priority and visibility within health-care, a recapitulation to times past when technology in medicine was limited. Furthermore, medical practitioners, health workers and administrators are called on to deeply consider embracing complexity dynamics as problem-framing references along with allied research methodology. Rather than seeking to control for, or extinguish, these complexities, researchers and practitioners might acknowledge and engage with a 'next wave' of complexity-informed health-care research to better understand how and why health-care relieves suffering and restores human function.

1.9 Chapter structure and content

This thesis is set out across seven chapters, comprising a literature review, methodology discussion, research findings, and discussion and conclusions. A summary of each chapter's content is provided below.

Chapter 2: Literature Review critically assesses the evidence for the ontological basis on which health services research on time-based targets is undertaken in the existing literature. The chapter presents a critical review of the strengths and gaps of the current literature pertaining to the evaluation of time-based targets in Emergency Departments and points to major issues with the ontological framing of Emergency Departments and, as a consequence, the need for evolving research methodologies for better evaluation of performance. As a consequence, some of the key issues and vulnerabilities of the dominant research methodologies used in health services research are highlighted, with specific focus on administrative interventions, the 4-Hour Rule, and the function of the patient-doctor relationship in the health system.

In addition, a review of the literature specifically pertaining to time-based targets in Emergency Departments, both within Australia and the international context, exposes some important gaps and controversies regarding the depth of coverage of the impact of time-targets, especially on health-care workers and patients.

Chapter 3: Methodology lays the ground work for an exploration and explanation of the methods of inquiry employed to examine the key research questions of this thesis. Picking up on the criticisms highlighted within the literature review pertaining to the ontological foundations of existing research on the 4-Hour Rule, the chapter describes the transition from attempts at quasi-quantitative research methods to a more appropriate, but less often applied, qualitative approach of phenomenology as a function of important ontological gaps and uncertainties in past research. Though deeply rooted in the pioneering work of Husserl, Giorgi's descriptive phenomenology research methodology, refined by the work of Aspers, ultimately serves as a sensible and authentic cooperation between an empiricist heritage and the goal of rendering a useful and faithful perspective on the lived experience of the doctors who participated in this inquiry. Empirical phenomenological methods are shown to sit comfortably within a critical realist paradigm that accommodates both the act of research and the nature of the object of that research, the clinical encounter itself: a relationship in which the positivist scientific paradigm and its research are interpolated and applied within a dynamic and non-linear information-incomplete relational dynamic, akin to Schön's lowland swamps of messy but important human problems.

This chapter also sets out a framework for assessing the validation and trustworthiness of the inquiry findings in generalised terms that can be applied to all qualitative research. It details how phenomenological inquiry, couched in a critical realist ontology, aligns with inference and verification methods, and thus provides readers with a précis of a method for independently assessing the integrity of this research.

In *Chapter 4: Findings Part One — First Order Constructs and Other Data*, details of interviews, data handling and summative textual analysis are presented as an entrée to the interview data set. An explanation of the outcome of the first stage of empirical phenomenological inquiry is provided — the First Order Constructs — before proceeding to a presentation of the nine Constructs. Each construct is accompanied by detailed descriptive evidence of its place within the text across all four interviews. The goal of the first stage of empirical phenomenology is to have arrived at a faithful

representation of the whole of the interview data as it occurs within the epoché and bracketing of the descriptive phenomenological method. As such, it is intended as an unfiltered and naïve descriptive exposition of the units of meaning of the participants' lifeworlds as they relate to the phenomena of interest in the clinical encounter, relationship with their patients, and sense of place of themselves and the patient-doctor relationship in the broader health-care setting of the Emergency Department and hospital.

Chapter 5: Findings Part 2 — The Second Order Constructs then elaborates on the nine First Order Constructs through imaginative variations that draw upon diverse literature, including the arts, physics, economics and sociology. Imaginative variations are a formal mechanism employed within descriptive phenomenology to ascertain the eidetic, or essential 'truth', of the elements of the phenomena of interest. Some elements from the First Order Constructs persist through these imaginative variations and are thus considered candidates for eidetic elements. Several new constructs emerge as synthetic and more fundamental components of the First Order Constructs. Although eight Second Order Constructs are tested through imaginative variation and presented in this chapter, only five appear to have eidetic potential.

A discussion and further exposition of the five potential eidetic elements is presented in *Chapter 6: Discussion*. As part of the vocative — the device for presenting the findings of phenomenological inquiry in the written form — the discussion introduces some new research and evidence-based findings to strengthen and clarify the central threads of logic emerging from the work in the First and Second Order Constructs. This is something of a unique aspect of phenomenological inquiry in which new evidence may be presented outside the formal thesis literature review. However, it is justified on the grounds of ensuring a phenomenological essentialist approach to the inquiry and a faithful and transparent presentation of the methodology employed in the research work.

In the final chapter, *Chapter 7: Conclusions and Future Directions*, the challenges, limitations and directions for future research are discussed with reference to the findings from the inquiry. Arguments in support of the role of qualitative phenomenological research in health services research are detailed against the limitations of any research on complex dynamic systems like health-care and Emergency Departments. Specific limitations observed in this inquiry are presented against a standardised model for evaluating the strength and trustworthiness of qualitative research in order to assist readers to form

judgments about the validity and appropriateness of the research methodologies and findings in the specific instance of this inquiry. Finally, closing statements are presented with respect to the novel findings from this inquiry and the opportunities these findings present for better understanding the nature of the patient-doctor relationship, the impact of the 4-Hour Rule on its dynamics, and its place in the context of the clinical encounter in the complex workplace of Australian public hospital Emergency Departments.

CHAPTER 2: Literature Review

2.1 Overview

Health-care research is an expansive enterprise, which from a publication perspective comprises in excess of 440,000 papers out of the average 2.5 million scholarly articles published world-wide each year.[42] [43] The goal of this literature review is to situate this inquiry in its proper context within that expanse and, in doing so, to critically reflect on the philosophical and methodological foundations for a rigorous inquiry into the nature, and impact, of administrative interventions, specifically the 4-Hour Rule, on the function of the patient-doctor relationship.

Given this inquiry's emphasis on questions of how an administrative intervention affects the performance of a health system, this work is immediately located within health services research, a multi-disciplinary field of inquiry dedicated to the study of social, political and economic factors that shape and determine the structures, processes and goals of health services.[44] Broadly, two research foci dominate health services research: implementation research, analysing the effectiveness of policy and governance interventions; and impact evaluation which aims to determine the effects of policy and governance interventions on quality dimensions of health services.[45]

The review is structured to address the key concepts of the primary research question, with a critical lens focussed on existing research practices. It establishes the historical context of research on interventions aimed at improving health system performance, and more specifically the dangerous systems issues that motivated the introduction of a 4-Hour Rule in Emergency Departments. In reviewing the current literature on the impact of the 4-Hour Rule, critical reflection exposes gaps and uncertainties regarding specific methodological and deeper structural issues in current research, arising from ontological assumptions about the nature of Emergency Departments. Finally, the assumption that administrative interventions can impact on the patient-doctor relationship is tested in the

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[42] B Druss and S Marcus, "Growth and Decentralization of the Medical Literature: Implications for Evidence-Based Medicine", *J Med Libr Assoc* 93, no. 4 (2005): 499-501.

[43] M Ware, *The STM Report: An Overview* of *Scientific* and *Scholarly Journal Publishing*, International Association of Scientific, Technical and Medical Publishers (2015).

[44] D Steinwachs and R Hughes, "Health Services Research: Scope and Significance", Ch 8 in *Patient Safety and Quality: An Evidence-Based Handbook for Nurses,* ed. R Hughes (Rockville: Agency for Healthcare Research and Quality, 2008).

[45] K Sheikh et al, "Building the Field of Health Policy and Systems Research: Framing the Questions", *PLOS Medicine* 8. no. 8 (2011): e1001073.

context of current literature, and the importance of the relationship in the systemic performance of health-care institutions is reviewed.

The review shows that while there are significant contributions and important insights offered with the predominant approaches to health services research, and the models of interaction between administrative interventions and institutional and professional performance upon which these approaches are based, an explicit characterisation of the ontological frame of hospital Emergency Departments is lacking. This limits some of the value of current dominant research methodologies in making sense of the impact of administrative interventions in complex working environments. There is a growing call for more health services research emphasising "more fundamental, exploratory, and explanatory questions" regarding "what actually happens, how and why".[46]

The approaches preferred in this thesis are demonstrated as novel, but valid, alternative methods for inquiry into complex interactional and transactional work spaces like Emergency Departments. The review indicates that the exploratory, qualitative approach applied in this thesis better assists:

a) the characterisation of the problems one might wish to investigate in the hospital context in order to establish the optimal problem-framing position from which to answer a research question, and

b) theory generation, as opposed to hypothesis testing, as an appropriate inductive approach to the research question in the setting of ontological uncertainty.

2.2 Health services research and evaluation

According to Bindman, health services research crystallised as an academic and scholarly pursuit in the 1960s, perhaps formally clarified as a field of inquiry with the commencement of the *Health Services Research* journal at around this time.[47] At the forefront of this movement, Kerr White, along with co-authors Williams and Greenberg, published a seminal paper, "The Ecology of Medical Care", in the *New England Journal of Medicine* in 1961, that examined data regarding the behaviour of people who identified themselves as 'sick' and the medical care they sought and received to address their sickness, including referrals from one physician to another.[48] From these data the authors

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[46] Sheikh et al, "Building the Field of Health Policy", e1001073.

[47] A Bindman, "The Evolution of Health Services Research", *Health Serv Res* 48, no. 2 (2013): 349-353.

[48] K White, F Williams and B Greenberg, "The Ecology of Medical Care", *NEJM* 265 (1961): 885-892.

concluded that 'medical-care research' was a critical complement to disease-based research to ensure the organisation of health-care reflected the needs of the population and were not skewed by the 'biased' samples of ill patients visiting tertiary university medical centres in which many doctors worked. White recalls in a review piece from 1997[49] that at the time of the 1961 publication there were two significant criticisms:

1. the use of the word 'ecology' in the title, and

2. the finding that primary care was of vastly greater need to more people in the population than specialist care, an outcome for which he was excoriated by his specialist contemporaries.

White et al's original article still serves as an ideal example of the focus of health services research and evaluation:[50] the relationship between service design and its environment and service outcomes. This perhaps justifies the use of the concept of 'ecology' for which these early authors were criticised. More recently, Lomas summarises the major features of health services research, presented in Figure 2.1, which helps to give shape to what, in itself, is the broad endeavour of health services research.[51]

Features of Health Services Research
A field of inquiry, not a discipline
An interdisciplinary effort between health and social scientists
Driven by the management and policy questions of those running the health-care system
Production of new knowledge and encouragement of its use by decision makers
Applied health services research involves decision-makers in the research process, and researchers in the decision-making process
Future trends towards increased consideration of values and equity, broader methodologies, and integration in transdisciplinary teams

Figure 2.1: Lomas' Features of Health Services Research (*Adapted from Lomas[51]*)

Characterising health services research in these ways suggests that the outcomes of particular interest in health services research include those related to the effects of policy

[49] K White, "The Ecology of Medical Care: Origins and Implications for Population-Based Healthcare Research", *Health Serv Rev* 32, no. 1 (1997): 11-21.

[50] L Green et al, "The Ecology of Medical Care Revisited", *NEJM* 344, no. 26 (2001): 2021-2025.

[51] J Lomas, "Health Services Research: A Domain Where Disciplines and Decision Makers Meet", Ch 2 in *Evaluating Critical Care: Using Health Services Research to Improve Quality,* eds. W Sibbald and J Bion (Berlin: Springer Science & Business Media, 2012), 6-22.

and management interventions on the function of a health system, for the benefit of many stakeholders including decision-makers and those tasked with delivery. More specifically, the 'management and policy questions' referred to by Lomas tend to focus on quality dimensions such as efficiency, effectiveness and safety, which suggests research goals aimed at assessing the *performance* of a given system to which they are applied.[52]

How one measures 'performance' of health services is an area of considerable controversy despite unifying attempts to apply key performance measures across health systems around the world.[53] Loeb is critical of the absence of agreement on

> *the philosophy of measurement, on what to measure, on whether or how to adjust for what the patient brings to the clinical encounter, on how data should be analyzed, or on how to report the data; and of course the ultimate questions relate to the value of measurement.*[54]

As a result of these uncertainties, as early as 1995, there were in excess of 100 definitions and performance indicator sets applied to quality in health-care.[55] Teisberg and Wallace liken the "measurement effort" to a Tower of Babel, in which clinicians, policy makers and consumers are confused and overwhelmed by extraneous and erroneous data that fail to measure the things that matter most in health for patients and success for clinicians.[56]

In spite of this lack of clarity between performance of health systems and how this is measured and reported, the WHO insists that the need for performance evaluation is contingent upon health system stakeholders (patients, clinicians, providers, governments etc) being linked by 'accountability relationships' that require: (a) a rendering of an account of the use of resources and outcomes (information provision), and (b) a holding to account by way of sanctions and rewards, as shown in Figure 2.2.[57]

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[52] J Braithwaite, "Health System Frameworks and Performance Indicators in Eight Countries: A Comparative International Analysis", *Sage Open Med* 5 (2017): 2050312116686516.

[53] C Almeida, "Methodological Concerns and Recommendations on Policy Consequences of the World Health Report 2000", *Lancet* 357 (2001): 1692-1697.

[54] J Loeb, "The Current State of Performance Measurement in Health Care", *Int J Qual Health Care* 16, Supp. 1 (2004): i5-i9.

[55] M Friedman, "Issues in Measuring and Improving Health Care Quality", *Health Care Finance Rev* 16, no. 4 (1995): 1-13.

[56] E Teisberg and S Wallace, "The Quality Tower Of Babel", *Health Affairs*, (April 13, 2015).

[57] P Smith, E Mossialos and I Papnicolas, *Performance Measurement* for *Health System Improvement: Experiences, Challenges and Prospects* (Copenhagen: WHO, 2008), 1.

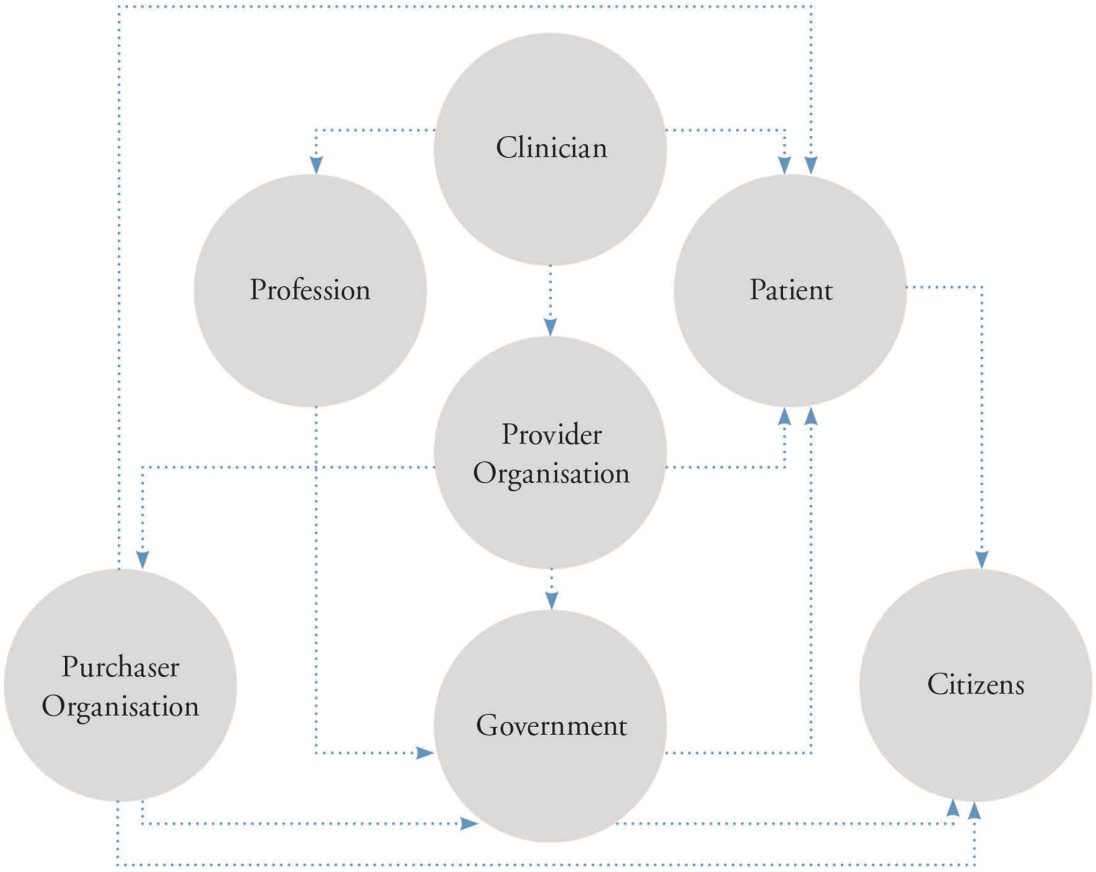

Figure 2.2: Accountability Relationships Informing Health System Performance Measurement (*Adapted from Smith, Mossialos and Papanicolas*[57])

Without performance measures, the data required for the equitable assessment of these accountability relationships are diminished and overall performance improvement, aimed at delivering health-care objectives, is compromised.[58]

Compounding the epistemological difficulties related to measurement, health services research is widely regarded as a transdisciplinary endeavour involving stakeholders from a diverse range of epistemic traditions including consumers, clinicians, political scientists, economists and anthropologists.[59] Far from eschewing this diversity, Lomas emphasises inclusion of social science approaches and a diversity of disciplines in health services research, as exemplified in Figure 2.3. Lomas' inclusion of social science approaches aims to moderate the effect of the dominant quantitative methodologies of the physical-

[58] ibid. 15.

[59] R Mullner, *Encyclopedia of Health Services Research* (Thousand Oaks: SAGE Publications, 2009), 564.

science-based approaches that are concerned with measuring numerical outcomes in medical efficacy and effectiveness.[60]

Including social sciences methodologies encourages transdisciplinary approaches to questions of evaluation, reflecting the wide-ranging disciplines of practice effecting, and affected by, health policy and management interventions, and making a wider selection of research methods available.[61] Each stakeholder and discipline may bring a different set of needs, interests and epistemologies to resolve questions in regard to the performance of health-care systems.

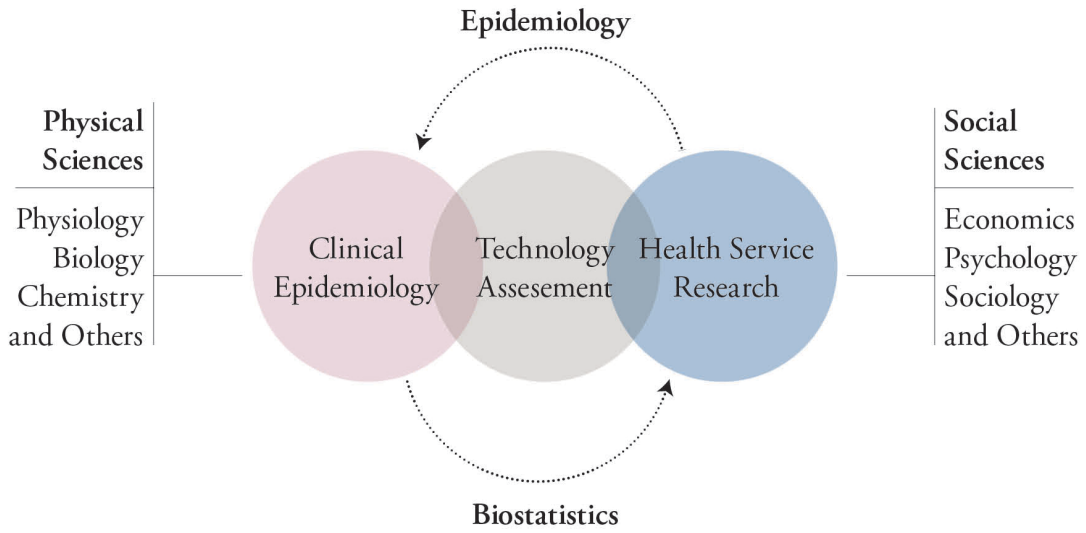

Figure 2.3: Health Services Research and Related Domains (*Adapted from Lomas[51]*)

In practice, Sobo argues, that despite the recognition of the utility of qualitative and quantitative approaches originating from the social sciences, most health services research activity takes place within a quantitative framing and is guided by experimental methods.[62] Fulop et al argue that the dominance of experimental methods has delayed the development of a broader, and more productive, view of evaluation of health services.[63]

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[60] S Tariq and J Woodman, "Using Mixed Methods in Health Research", *JRSM Short Rep* 4, no. 6 (2013): 2042533313479197.

[61] A Bowling, *Research Methods in Health: Investigating Health and Health Services 2nd Ed* (Buckingham: OUP, 2002), 1-3.

[62] E Sobo, *Culture and Meaning in Health Services Research: An Applied Approach* (London: Routledge, 2016), Ch 7.

[63] N Fulop et al, "Issues in Studying the Organisation and Delivery of Health Services", Ch 1 in *Studying the Organisation and Delivery of Health Services: Research Methods,* eds. P Allen et al (London: Routledge, 2004), 3.

2.2.1 Methodologies for evaluating administrative interventions

While a question like, 'how do administrative interventions affect the patient-doctor relationship?' could be answered using the predominant experimental statistical case-control methodologies of the physical sciences in medical research, certain important methodological problems arise for which remedy is difficult. For example, a case-control trial analysed using traditional biostatistics will require adequate 'statistical power' in order to draw statistical inferences. This means that there must be adequate numbers of participants in both an active intervention group and a control group to ensure that any difference, or lack of difference, is statistically unlikely to be due to chance.

The number of participants required is contingent upon the size of the difference that is estimated. The relationship is inverse: the greater the expected difference, the fewer participants required to detect it.[64] Powering is also contingent on the number of differences (variables) between the two groups being investigated, and in general requires larger numbers of participants when more variables are examined.[65] Despite these very well understood requirements of good-quality control trials, a staggering amount of underpowered medical research literature (estimated at between half and two-thirds of thousands of studies) is published each year.[66] This lack of statistical power is an area of continued controversy in medical research, with some arguing that it is unethical to recruit people to human research that is underpowered, and others arguing that power is only one aspect of good-quality research design and needs to be taken in context.[67]

Beyond statistical challenges, policy and administrative interventions in health are recognised as 'complex interventions' designed to impact on many aspects of a health-care system at one time.[68] As a consequence, designing experimental interventions and measuring outcomes require good theoretical understanding of causal links, adequate statistical power, and a research environment in which funding and resources are adequate to sustain the cost and duration of phased developmental studies on interventions.[69] In

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[64] B Roozenbeck et al, "Underpowered Trials In Critical Care Medicine: How to Deal With Them?", *Crit Care* 14, no. 3 (2010): 423.

[65] J Cohen, "A Power Primer", *Psychological Bulletin* 112, no. 1 (1992): 155-159.

[66] H Gardner, K Gillies, and S Treweek, "Healthcare's Dirty Little Secret: Results From Many Clinical Trials are Unreliable", *The Conversation*, (Oct 19, 2016).

[67] J Hughes, "The Ethics of Underpowered Clinical Trials", *JAMA* 288, no. 17 (2002): 2118-2119.

[68] M Campbell et al, "Framework for Design and Evaluation of Complex Interventions to Improve Health", *BMJ* 321, no. 7262 (2000: 694-696.

[69] P Craig et al, "Developing and Evaluating Complex Interventions: The New Medical Research Council Guidance", *BMJ* 337 (2008): a1655.

addition to answering the question, 'does this intervention work?', research might also focus on the process of intervention, with the aim to "distinguish between interventions that are inherently faulty (failure of intervention concept or theory) and those that are badly delivered (implementation failure)".[70]

In response to what was seen as a continued limited use of good-quality experimental and quasi-experimental designs in health services research, the Medical Research Council UK published popular guidelines in 2000, with an update in 2006, to guide the development of experimental trial designs for 'complex interventions', being those interventions occurring in settings where issues can arise from "sensitivity to features of the local context, the organisational and logistical difficulty of applying experimental methods to service or policy change, and the length and complexity of the causal chains linking intervention with outcome".[71] The guidelines reiterate that in order to determine an appropriate trial design, it is necessary to develop an understanding of the evidence-base, and develop a quality theory about how an intervention achieves its outcome by modelling processes.[72]

However, in response to a growing realisation that purely experimental approaches to health services research are inadequate for addressing some of the most important questions in health services,[73] and in recognition of the value of contributions that could be made from social sciences perspectives on health services evaluation, investigators increasingly turn to 'mixed methods' approaches that combine qualitative and quantitative methodologies.[74] [75] [76] This turn represented a collective view, that given the complexity of the interventions under investigation and the wide-ranging outcomes of interest arising from the diversity of accountability relationships, the strongest evidence, or validity, for the quality of performance of a health system, and the efficiency with which it delivers on outcomes, is best achieved through 'triangulation' of the data and results

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[70] A Oakley et al, "Process Evaluation in Randomised Controlled Trials of Complex Interventions", *BMJ* 332, no. 7538 (2006): 413-416.

[71] Craig et al, "Developing and Evaluating Complex Interventions", a1655.

[72] ibid.

[73] C Pope and N Mays, "Reaching the Parts Other Methods Cannot Reach: An Introduction to Qualitative Methods in Health and Health Services Research", *BMJ* 311 (1995): 42-45.

[74] W Zhang and J Creswell, "The Use of 'Mixing' Procedure of Mixed Methods in Health Services Research", *Med Care* 51, no.8 (2013): e51-e57.

[75] L Curry et al, "Mixed Methods in Biomedical and Health Services Research", *Circ Cardiovasc Qual Outcomes* 6, no.1 (2013): 119-123.

[76] J Creswell et al, *Best Practices for Mixed Methods Research in the Health Sciences* (Lincoln: Office of Behavioral and Social Sciences Research, 2013).

from quantitative and qualitative methodologies.[77] As an example pertinent to this thesis, Gonzalez Morganti et al enriched quantitative data of Emergency Department hospital usage by applying qualitative methods, including in-depth interviews with patients, to discover important contexts and explanations for why patients use Emergency Departments and the societal role Emergency Departments play in the broader community.[78]

Despite growing popularity within health services research,[79] a mixed-methods approach is not without its own set of controversies. These are articulated most succinctly by Creswell, who identifies at least 11 principal controversies, including the actual definition of mixed-methods; the viability of combining qualitative and quantitative descriptors; the 'paradigm debate' and the question of privileging one ontology over another; and the potential misappropriation of designs and procedures from other approaches.[80]

In the context of health services research, the most critical of these controversies is arguably the absence of explicit definitions of the philosophical or ontological framing of the research. This relates to Kuhn's so-called 'paradigm', a description of the ontological and coherent epistemological context from within which any research is conceived, and within which the validity and coherence of what is proposed as the subject of research and the methods used for inquiring into its nature are explicitly declared for all other observers to judge.[81] In one sample, less than a third of researchers explicitly addressed justification for mixed methods on philosophical or ideological grounds, and many researchers engaged in the practice for pragmatic reasons, including securing funding.[82]

There is a fundamental and important paradigm assumption made within the context of the Medical Research Council's promotion of experimental design and the broader evidence of the dominance of the experimental model. Though not expressed explicitly in the UK guidelines, one gleans, from the way in which arguments and recommendations

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[77] A Bowling, *Research Methods in Health: Investigating Health and Health Services*, (London: McGraw-Hill Education, 2014), 419.

[78] K Gonzalez Morganti et al, "The Evolving Role of Emergency Departments in the United States", *Rand Health Quart* 3, no. 2 (2013): 3.

[79] A O'Caithain, E Murphy, and J Nicholl, "Why, and How, Mixed Methods Research is Undertaken in Health Services Research in England: A Mixed Methods Study", *BMC Health Serv Res* 7 (2007): 85.

[80] J Creswell, "Controversies in Mixed Methods Research", Ch 15 in *The SAGE Handbook of Qualitative Research,* eds. N Denzin and Y Lincoln (Thousand Oaks: SAGE, 2011), 270.

[81] T Kuhn, "The Structure of Scientific Revolutions", in *The International Encyclopedia of Unified Science*, ed. O Neurath (USA: University of Chicago, 1970), 43-51.

[82] O'Caithain et al, "Why, and how, mixed methods research", 85.

are framed within the guidelines, that the authors' underlying ontological viewpoint is that the world of health-care has an external objectivity that can be examined by a researcher, in which action to modify the behaviour of an object within that world will have a quantitatively predictable measurable effect on the behaviour of other objects in that world. Experimental design, thus, operates within a logical positivist worldview.[83] Fulop et al more explicitly acknowledge the issue of a logical positivist perspective on health services research and juxtapose the logical positivist experimental paradigm against an interpretive subjectivist position in which 'facts' are not 'out there' in an objective world, but are contingent upon the perspective of the observer, a view that lies at the heart of many important qualitative approaches to research, including those in health services research.[84] Such theoretical tensions and uncertainties are perilous in the face of strong criticism that admixing of paradigms of this type is inherently illegitimate.[85]

In the context of health services research, Shi points out the paradigm adopted by a researcher does not itself necessarily provide answers to a research question, but it materially shapes how a researcher conceives of the place and space in which to look for answers.[86] It informs the methods of inquiry and the basis for interpretation of results upon which the researcher relies to draw conclusions about the nature of phenomena. Guba and Lincoln argue that this relationship — between paradigm and all that follows in research — places paradigm and its ontologies ahead of all other considerations.[87]

Kernick argues that utilising alternative methodologies, including those outside of a logical positivist paradigm, is required because of the continued failure of health services research in the positivist paradigm to deliver health services improvement.[88] In spite of this entreaty, the positivist paradigm remains dominant, perhaps as a function of wider sociological and medical research pressures, mirroring "the cult of empiricism" as described by Toulmin and Leary in relation to the empirical trajectory of psychological

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[83] E De Poy and L Gitlin, *Introduction to Research: Understanding and Applying Multiple Strategies* (London: Elsevier Health Sciences 1998), 17.

[84] Fulop et al, *Issues* in *Studying* the *Organisation* and *Delivery* of *Health Services*, 4-7.

[85] E Murphy, "Micro-level Qualitative Research", Ch 3 in *Studying the Organisation and Delivery of Health Services: Research Methods,* ed. P Allen et al (London: Routledge, 2004), 41-42.

[86] L Shi, *Health Services Research Methods* (USA: Cengage Learning, 2007), 4-5.

[87] E Guba and Y Lincoln, "Competing Paradigms in Qualitative Research", Ch 6 in *Handbook of Qualitative Research,* eds. N Denzin and S Lincoln (London: Sage, 1994), 105-107.

[88] D Kernick, "Wanted—New Methodologies for Health Service Research. is Complexity Theory the Answer?", *Family Prac* 23, no. 3 (2006): 385-390.

research from its more eclectic origins in the late 19th century.[89] [90] [91] In terms of health services research, the positivist perspective may be encouraged due to a general trend among decision-makers for 'evidence' about efficiency and effectiveness of health services programs that favour quantitative approaches using 'objective' forms of measurement.[92] This trend, along with the dominant medical research background of many health services researchers, has resulted in the 'medicalisation' of the health services research agenda.[93]

2.2.2 Medicalisation of health services research

Though it is not explicitly defined as medicalisation, Gilson et al write of a comparable concept of 'disciplinary capture', in which "the imposition of a particular knowledge frame on the field, privileging some questions and methodologies above others" is observed to have taken place in health services research.[94]

Medicalisation is defined as the process in which deviant behaviours are increasingly catalogued and described in biomedical terms to minimise, eliminate or normalise those behaviours.[95] Illich argues that the medicalisation of life itself in Western societies began with "belief in unlimited progress". He states:

> *Progress in medicine meant the persistent effort to improve human health, abolish pain, eradicate sickness and extend the life span by using ever-new engineering interventions. Organ grafts, dialysis, cryogenics, and genetic control still fired expectations rather than dread. The doctor was at the height of his role as a culture hero. The deprofessionalized use of modern medicine still had the status of a crank proposal.* [96]

Illich suggests that as a consequence, "[a]ll political systems generate the same dependence on physicians, even though capitalism [compared with socialism] imposes a much higher cost".[97] These views remain contemporary. Recent literature also alludes to

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[89] B Tronvoll et al, "Paradigms in Service Research", *J Service Management* 22, no. 5 (2011): 560-585.

[90] A Ryan, *Post-Positivist Approaches to Research,* in *Researching and Writing Your Thesis: A Guide for Postgraduate Students*, ed. M Antonesa (Maynooth: National University of Ireland, 2006), 12-26.

[91] S Toulon and D Leary, "The Cult of Empiricism in Psychology, and Beyond", in *A Century of Psychology as Science*, eds. S Koch and D Leary (McGraw-Hill, 1992), 594.

[92] W Walker, "The Strengths and Weaknesses of Research Designs Involving Quantitative Measures", *J Res Nursing* 10, no. 5 (2005): 571-582.

[93] Sheikh et al, "Building the Field of Health Policy and Systems Research", e1001073.

[94] L Gilson et al, "Building the Field of Health Policy and Systems Research: Social Science Matters", *PLoS Medicine* 8, no. 8 (2011): e1001079.

[95] P Conrad, "Types of Medical Social Control", *Soc Health Illness* 1, no. 1 (1979): 1-11.

[96] I Illich, "The Medicalisation of Life", *J Med Ethics* 1 (197): 73-77.

[97] ibid. 76.

the socio-cultural connection between health, ill health, and hospitals and physicians, with de Camargo conceptualising medicalisation as:

…the interaction between the subjective feeling that something is going wrong and cultural patterns in the expression of health problems and the services' availability. In contemporary industrial societies, this interaction results in seeking a hospital or clinic where one expects some disease to be diagnosed, for which a treatment will be proposed.[98]

Foucault argues in 'Historia de la Medicalización' that medicalisation is a consequence of social reorganisation that both created the place for modern medicine and made citizens submit to its control.[99] Perhaps Conrad, though, offers the most useful perspective for this inquiry, with his observation that categorisation of certain human behaviour, psychic states and bodily functions — whether or not these are 'truly' medical — as things with "medical diagnosis and medical treatment" has had profound sociological effects of an ontological nature.[100]

Medicalisation within health services research, along with its impact on questions of ontology regarding the nature of a health-care system, has a context within general social and cultural phenomena in the community, and has tended to favour a focus away from public health activities towards individual causation of illness and disease.[101] Medicalisation promotes specific effects on how questions are framed for evaluating the benefits of complex quality-related interventions like the 4-Hour Rule within the domain of health services research. Championing this approach is Donabedian, writing in his influential quality assurance textbook, 'An Introduction to Quality Assurance in Health Care':

…the science and technology of health care set the standards not only for efficacy but for the other attributes of quality as well. This means that actual performance in all its aspects is compared to what our science and technology, at its best, is expected to achieve. It requires that "science and technology" be defined broadly to include not only biological factors but the behaviour sciences as well. It is true that these sciences may not be, as yet sufficiently developed to offer us clear guidelines and precise standards. It is hoped, however, that they will be able to do so as they mature. And finally we should remember that not all standards of performance derive from what we are accustomed to call "science and technology". Some

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[98] K de Camargo, "Medicalization, Pharmaceuticalization, and Health Imperialism", *Cad. Saúde Pública Reports in Public Health* 29, no. 5 (2013): 844-846.

[99] M Foucault, "Historia de la medicalización", *Educación médica y salud* 11, no. 1 (1977): 3-25.

[100] P Conrad, *The Medicalization of Society: On the Transformation of Human Conditions into Treatable Disorders* (Waltham: The Johns Hopkins University Press, 2007), 3-10.

[101] P Lantz, R Lichtenstein and H Pollack, "Health Policy Approaches to Population Health: The Limits of Medicalization", *Health Affairs* 26, no. 5 (2007): 1253-1257.

standards are set by social and individual preferences, and some others by ethical and moral considerations.[102]

Though not a complete capitulation to a biomedical paradigm of research, Donabedian here strongly endorses it. Sadly, despite his acknowledgement of the "ethical and moral considerations" underpinning some ideas about standards of performance, these are not critically dealt with in his technical writing. He does detail reflections on the importance of culture and interpersonal interactions, particularly the patient-doctor relationship, for quality health-care, but neither is explicitly identified within his framework for quality assurance.[103]

Structure	Process	Outcomes
Infrastructure	Diagnosis	*Mortality*
Demographics	Treatment	*Morbidity*
Technology	Appropriateness	*Cost*
Education	Process of care	*Factors creating cost*
Facilities	Resource requirements	*Quality of life*

Figure 2.4: Donabedian's Structure-Process-Outcomes Quality Assurance Model (*Adapted from Lighter*[104])

A typical representation of the three domains of Donabedian's 'Structure Process Outcomes' approach, and the elements catalogued in each, is presented by Lighter, in Figure 2.4.[104]

Liu et al apply the model to the problem of 'ED Bboarding', where patients wait within the physical environment of the Emergency Department for transfer to the appropriate ward, and then use a review of the literature to create a conceptual model as an explanation for some of the quality-related outcomes for patients who were 'ED boarders' (see Figure 2.5).[105] The model is fundamentally characterised as a model attempting to explain causation, but the authors admit its limited utility in the face of sparse literature informing the weighting of hypothesised causal paths.

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[102] A Donabedian, *An Introduction to Quality Assurance in Health Care* (Canada: Oxford University Press, 2002), 4.

[103] ibid. 18-22.

[104] D Lighter, "How (and why) do Quality Improvement Professionals Measure Performance?", *Int J Ped Adol Med* 2, no. 1 (2015): 7-11.

[105] S Liu et al, "A Conceptual Model for Assessing Quality of Care for Patients Boarding in the Emergency Department: Structure-Process-Outcome", *Acad Emerg Med* 18, no. 4 (2011): 430–435.

The imprint of a positivist empirical research paradigm is also noted by Maxwell, who concludes that the common recommendation from major reports into avoidable patient harm is the use of quantitive assessment of the effectiveness of standardised protocols, for example, with the use of time series analysis in 'before and after' controlled studies.[106]

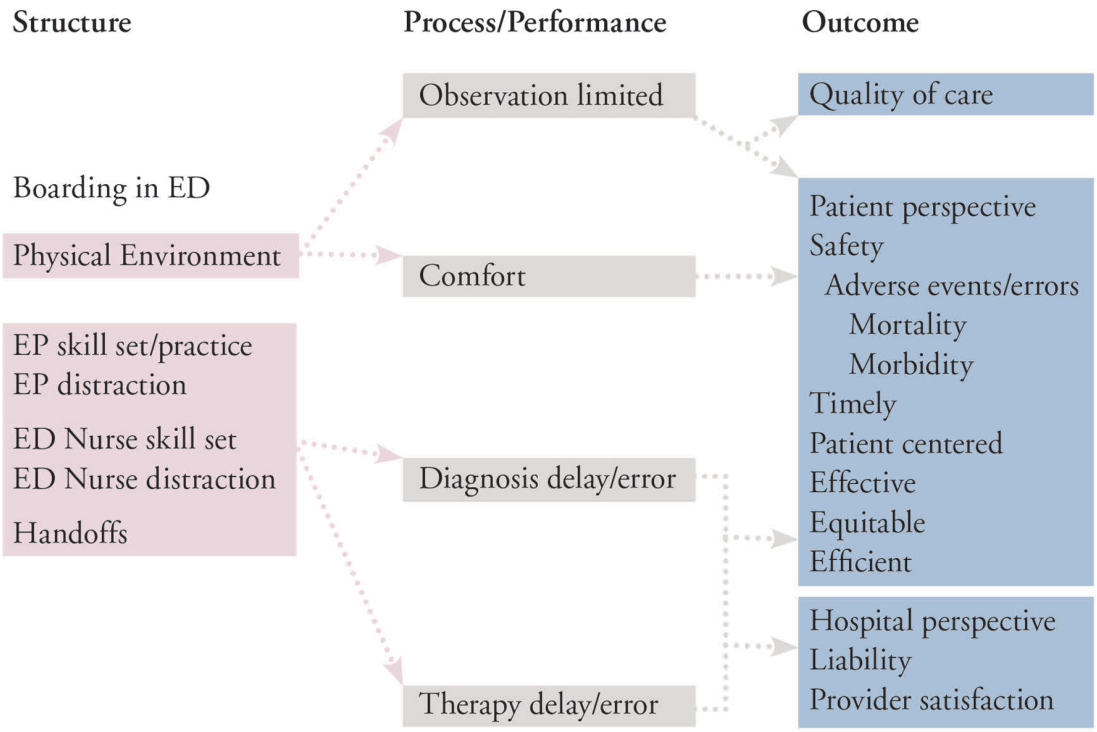

Figure 2.5: Conceptual Model using Structure-Process-Outcome for ED Boarding (*Adapted from Liu et al*[105])

In terms of research in the narrower context of effectiveness of the 4-Hour Rule in hospitals in Australia since 2008, only one of the 38 publications refers to a mixed-methods design, with the others organised in the predominant quantitative positivist paradigm.[107] The papers define variables and outcomes that are quantitatively measured and compared, and methods of data analysis describe statistical processes used to 'control for' latent variables or other 'confounding' factors. Those papers that refer to a development stage, in which authors assessed existing literature and built models of theory, all use linear cause-and-effect modelling and all report their data in a standardised quantitative experimental or quasi-experimental design.[108] These features are the classical gold-standards of clinical medicine research design.[109] This emphasis on positivist

[106] E Maxwell, "Perspective", *J Research Nursing* 19, no. 3 (2014): 264-266.

[107] See Appendix 1

[108] See Appendix 2

[109] L Bothwell et al, "Assessing the Gold Standard — Lessons from the History of RCTs", *NEJM* 374 (2016): 2175-2181.

empiricism is consistent with the rationale of the previously cited Medical Research Council UK's creation of a Complex Interventions guide, which was designed to inculcate medical standards of evidence-based practice into policy and social science research in health-care settings.

Lomas sounds a cautionary note regarding the risks of medicalisation in health services research,[110] and Spiers echoes that concern that medicalisation is a risk to "a health dream […] alternative of a more self-responsible, risk-accepting, creative society in which the individual is valued and enabled to express values, beliefs, and preferences in their unique, lived-only-once life".[111] Donabedian, recognised as 'the father' of quality assurance in health-care, whose model more than any other has defined the research agenda of health services research for three decades,[112] [113] reflected on the nature of health-care and the purpose of health services research, near the end of his life:

Health care is a sacred mission... a moral enterprise and a scientific enterprise but not fundamentally a commercial one. We are not selling a product. We don't have a consumer who understands everything and makes rational choices — and I include myself here. Doctors and nurses are stewards of something precious... Ultimately the secret of quality is love. You have to love your patient, you have to love your profession, you have to love your God. If you have love, you can then work backward to monitor and improve the system.[114]

Given the complex nature of implementing policy and administrative interventions in health-care settings, some authors argue for the need for more systematic approaches to health services research, and the evaluation of complex interventions. Greenhalgh et al promote, among a range of recommendations, recognition of the "inherent limitations of experimental approaches to researching open systems and [the need to] embrace a broad range of research methods emphasizing interpretive approaches".[115] In the 2006 update to the Medical Research Council UK's Complex Interventions guide, the

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[110] J Lomas, and A-P Contrandriopoulos, *Regulating Limits to Medicine: Towards Harmony in Public- and Self-Regulation*, Ch 10 in *Why are Some People Healthy and Others Not?,* ed. M Barer (New York: Routledge, 2017), 253-283.

[111] J Spiers, *Patients, Power and Responsibility: The First Principles of Consumer-driven Reform* (Gloucester: Radcliffe Publishing, 2003), 194.

[112] M Best and D Neuhauser, "Avedis Donabedian: Father of Quality Assurance and Poet", *BMJ Qual Safety* 13, no. 6 (2004): 472-473.

[113] J Ayanian and H Markel, "Donabedian's Lasting Framework for Health Care Quality", *NEJM* 375 (2016): 205-207.

[114] F Mullan, "A Founder of Quality Assessment Encounters a Troubled System Firsthand", *Health Affairs* 20, no. 1 (2001): 137-141.

[115] T Greehalgh et al, "Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations", *Milbank Q* 82, no. 4 (2004): 581-629.

"assumption that conventional clinical trials provide a template for all the different approaches to evaluation" was not above criticism.[116]

Picking up the thread of Donabedian's reflection, the challenge of medicalisation appears to be balancing the tension created between production of valid inferences as to the effects of health services interventions on performance and quality of health services, and the potential for the loss of grounding in the ethical and humanistic purpose of health services, with an emphasis on a person-centred approach to health services design and evaluation.[117] Addressing this tension, and locating ethics and relationship explicitly within the health services research discourse, aims to ensure that quality health services, and the data used to judge their performance, are directed towards delivering the outcomes that society has invested so much in achieving.[118] Donabedian recognised the immanence of ethics and people within health services in commentary, just before his death in 2000, that "systems… are enabling mechanisms only. It is the ethical dimension of individuals that is essential to a system's success".[119]

2.2.3 The place of ethics in health services research discourse

Beyond Donabedian's original work, a comprehensive review of medical, management and health services literature failed to clarify where researchers locate ethics and morality within the three domains of Donabedian's model applied to their areas of health service research. Donabedian's model has been used to frame research *into* clinical ethics programs in health-care organisations.[120] In a Swedish paper that applies the model to an assessment of the structure of quality systems used to inform quality assurance in health-care settings, the researchers pose two human relations indicators, which could be construed as proxies for ethics indicators, 'quality improvement culture' and 'cooperation between staff', and place these indicators in the 'process' domain of their model.[121] These same authors report that factor analysis of the results of their survey of over 360

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[116] P Craig et al, *Developing and Evaluating Complex Interventions: New Guidance*, (London: Medical Research Council, 2006), available at https://www.mrc.ac.uk/documents/pdf/complex-interventions-guidance/ .

[117] A Cribb, *Healthcare in Transition: Understanding Key Ideas and Tensions in Contemporary Health Policy* (Bristol: Policy Press, 2017), Ch 2.

[118] D Swartzman, *Ethics*, in *Encyclopedia of Health Services Research,* ed. R Mullner (SAGE Publications, 2009), 378-382.

[119] D Berwick and D Fox, "Evaluating the Quality of Medical Care: Donabedian's Classic Article 50 Years Later", *Milbank Quart* 94, no. 2 (2016): 237-241.

[120] E Fox, "Reframing the Evaluation of Clinical Ethics Programs to Better Fit Organizational Needs", *Bioethica Forum* 9, no. 2 (2016): 82-85.

[121] S Kunkel, U Rosenqvist, and R Westerling, "The Structure of Quality Systems is Important to the Process and Outcome, an Empirical Study of 386 Hospital Departments in Sweden", *BMC Health Serv Res* 7 (2007): 104.

hospitals failed to generate an adequate correlation between these human relations indicators in either the 'process' or 'structure' domains, and so the concepts were abandoned from their further analysis.

Donabedian himself seems to proclaim, *ex parte* of his formal descriptions of his model, that the *a priori* condition for any good-quality system in health-care is its foundation in ethics and people.[122] According to Fox, the absence of apparently important features such as ethics from health services research outcomes may be the result of a limited availability of "valid measurement tools",[123] which implies a predominantly quantitative paradigm for health services research. This may reflect broader challenges in health services evaluation consistent with medicalisation.

Groene observes that despite considerable progress in answering the questions of:

"how can quality be measured?" [and] "how can quality be improved?"… and the widespread application of quality strategies (such as accreditation systems, organisational quality management programmes, audit, patient safety systems, clinical practice guidelines, performance indicators and systems for getting patient views), quality and safety problems persist and the debate on how to accelerate and sustain quality improvement is more relevant than ever.[124]

Hence, despite the importance placed on approaching research and evaluation questions in health services research from a range of different methodologies,[125] medicalisation of the health services research agenda may, at least in part, be privileging a positivist empirical perspective that is inadequate in fully realising an understanding of the ways in which policy and administrative interventions in health-care, such as a 4-Hour Rule, effect change in the health system.

2.2.4 A theory-building approach to research methodology

Given the NEAT may be characterised as a complex intervention affecting a complex system, it is important to be clear about the specific ontological frame informing this inquiry. David and Sutton argue that paradigm transparency is essential to determining questions of ontology and the epistemological and theoretical perspectives from which

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[122] A Donabedian, "The Evaluation of Medical Care Programs", *Bulletin of the New York Academy of Medicine* 44, no. 2 (1968): 117-124.

[123] E Fox, "Evaluating Ethics Quality in Health Care Organizations: Looking Back and Looking Forward", *AJOB Primary Research* 4, no. 1 (2013): 71-77.

[124] O Groene et al, "Investigating Organizational Quality Improvement Systems, Patient Empowerment, Organizational Culture, Professional Involvement and the Quality of Care in European Hospitals: The 'Deepening Our Understanding of Quality Improvement in Europe (DUQuE)' Project", *BMC Health Serv Res* 10 (2010): 281.

[125] B Lo, "Values in Research: Picking Research Priorities Ethically", Ch17 in *Ethical Dimensions of Health Policy,* eds. M Danis, C Clancy, and L Churchill (New York: Oxford University Press, 2005), 337-354.

the inquiry is approached, and to ensuring downstream choices of theory construction and methodology are aligned.[126]

Theory makes an essential contribution to framing what, and how, questions are defined for the purpose of inquiry in health services research.[127] [128] 'Evaluation' is an important component of health service research aimed at determining to what degree health services fulfil their stated objectives.[129] Fox reproduces Rossi et al's five types of evaluation questions: (1) Assessment of Need; (2) Assessment of Program Theory; (3) Assessment of Program Process; (4) Assessment of Program Impact; and (5) Assessment of Program Efficiency.[130] These five types of evaluation questions offer a helpful framework for clarifying where to focus evaluation efforts for this inquiry.

Considering evaluation question (1) Assessment of Need, Section 2.3.1 of this review, to follow, details the international literature showing that an urgent need is being addressed by administrative interventions, such as the NEAT, that are aimed at reducing Emergency Department overcrowding. Overcrowding in departments is harming patients and interfering with quality performance beyond just the physical space of the emergency room. There have been debates as to whether or not the Emergency Department and hospital are the 'best' places to focus energy on improving health-care performance in emergency care, but in the Australian context there are some convincing data that reorganisation and reallocation of health funding towards frontline services in Emergency Departments and hospitals are critical to recovery from overcrowding.[131]

The literature from Australia that examines the 4-Hour Rule, notably reviews by Silk, and Staib and Sullivan, which are explored in detail in sections to follow, has addressed the question of intervention design and impact and, to some degree, passed qualified judgment on the economic efficiency of the 4-Hour Rule in Emergency Departments. The literature thus addresses Rossi et al's questions (3), (4) and (5). This literature review reveals the widest gap in the current literature is in addressing question (2) Assessment of Program Theory.

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[126] M David and C Sutton, *Social Research: The Basics* (Thousand Oaks: SAGE, 2004), 35-37.

[127] M Kelly, "The Role of Theory in Qualitative Health Research", *Family Prac* 27, no. 3 (2010): 285-290.

[128] C Pope and N Mays, *Qualitative Research in Health Care* (Great Britain: John Wiley & Sons, 2013), 1-3.

[129] S Smith, D Sinclair, and R Raine, *Health Care Evaluation* (Maidenhead: Open University Press, 2005), 12.

[130] Fox, "Reframing the Evaluation of Clinical Ethics Programs", 83.

[131] J Sammut, *Why Public Hospitals are Overcrowded: Ten Points for Policymakers* (St Leonards: The Centre for Independent Studies, 2009), vii-viii.

Kernick argues that there is a paucity of theory-building literature published in health services research that evaluates the impact of complex interventions designed with the explicit intent of wide-scale change in inter-related and interacting agents and agencies in health-care settings.[132] Christensen and Carlile contend that theory-building requires descriptive and inductive phenomenological research as a foundation for construct formation and abstraction to generalisation, which can then be hypothesis tested.[133] Alderson concludes that without explicit theory as a foundation for research approaches, health-care research may obscure new insights or equally clarify or confuse the implications of research findings.[134] Hence, finding a solid grounding for a theory or theories pertaining to administrative interventions in the hospital setting is an important first principle in being able to evaluate the effects of interventions.

This inquiry is designed to address the important gaps in the current literature which relate to the theoretical bases for research into the impact of complex interventions, such as the 4-Hour Rule, on the patient-doctor relationship and why this might matter in the context of health system performance. In doing so, this inquiry makes a contribution to theories of both the ontological frame of the hospital Emergency Department and the actors within it, and the basis upon which the 4-Hour Rule has been perceived to have affected physicians and their performance. The literature review shows that the assumed positivist approach of past research is in need of some significant revision so as to better inform the methods one might use to investigate or evaluate the system of interest. These issues are dealt with in detail in *Chapter 3: Methodology*.

2.3 Key concepts of the clinical encounter and time-based interventions

The focus of this inquiry relies upon the assumption that the patient-doctor relationship is impacted by the NEAT and that physicians' perceptions of these impacts can reveal key phenomena within the clinical encounter which mediate or are affected by the administrative intervention.

This key assumption is tested in the context of the current literature pertaining to the development and implementation of the 4-Hour Rule, and, on a broader scale, the

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[132] Kernick, "Wanted — New Methodologies for Health Service Research", 385-390.

[133] C Christensen and P Carlile, "Course Research: Using the Case Method to Build and Teach Management Theory", *Academic Manage Learn Educ* 8, (2009): 240-251.

[134] P Alderson, " The Importance of Theories in Health Care", *BMJ* 317, no. 7164 (1998): 1007-1010.

function and dynamics of the patient-doctor relationship in the context of health-care system performance.

2.3.1 Motivation for a National Emergency Access Target in Australia

In this section, the dangers of Emergency Department overcrowding to safe patient care and good-quality patient outcomes is reviewed from an historical perspective, and the evidence for overcrowding as a primary issue in motivating a systemic response to the function and organisation of the Emergency Department within hospital health-care is explicated. This establishes a strong justification for continuing research focussed on the impact of administrative interventions in hospitals, as well as framing important continuing controversies that ought to be part of the focus of that effort.

2.3.1.1 Emergency Department overcrowding — a deadly pressure point

The 4-Hour Rule did not arise out of a vacuum in the Australian context. Some years before, in 2006, the *Medical Journal of Australia* had published a series of papers on the dangers posed to patients from overcrowding and excess demands on hospital Emergency Departments, including an association with increased mortality in at least one major metropolitan hospital.[135] [136] The editorial of this same edition bemoaned the problems of excessive demands being made on public hospital Emergency Departments and concluded that overcrowding, an indicator of this excess demand across the whole system of the hospital and its inputs and outputs, meant there was an urgent need for increased resources to stem the tide and improve services.[137]

The Australian perspective reflects a broader experience from the US, Europe and the UK of systemic problems with demands and resources in hospital Emergency Departments. By the 1990s, and into the early 2000s, researchers were investigating the causes and impact of Emergency Department overcrowding, having recognised it as a major threat to quality health-care.[138] In the US in 2003, Trzeciak and Rivers undertook a literature review and found that overcrowding of US Emergency Departments was threatening patient safety, and the causes, though complex, appeared to be primarily

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[135] Sprivulis, "The Association Between Hospital Overcrowding and Mortality", 208-212.

[136] Richardson, "Increase in Patient Mortality at 10 Days", 213-216.

[137] Cameron, "Hospital Overcrowding: A Threat to Patient Safety?", 203-204.

[138] R Derlet and J Richards, "Overcrowding in the Nation's Emergency Departments: Complex Causes and Disturbing Effects", *Ann Emerg Med* 35, no. 1 (2000): 63-68.

inadequate inpatient capacity and increasing severity of illness.[139] Similarly, a review in Canada in 2002, titled 'No Room at the Inn', confirmed a complementary set of problems and indicative causes.[140]

By the mid-2000s other evidence was emerging of specific diagnosis-related deleterious effects of overcrowding, which included delays in life-saving thrombolysis for patients with suspected myocardial infarction, and delays in the evaluation of patients presenting with chest pain as a primary symptom, with financial losses for hospital revenue.[141] [142] In addition to disease-specific issues, Bernstein et al undertook an extensive review of literature from 1989 to 2007 that examined the impact of overcrowding on the Institute of Medicine (IOM) quality care dimensions (safety, patient-centred, timely, efficient, effective, and equitable). This review discovered that overcrowding particularly affected safety and timeliness.[143]

Defining the nature of the problem of overcrowding itself is a difficult task.[144] Raj et al assessed the utility of a national Emergency Department overcrowding data collection tool in Australia against the perceived sense of overcrowding in the department by senior medical and nursing staff. They found that the objective tool did not correlate well with the clinical experience of the same shift.[145] Jones et al assessed four tools and their correlation with clinical experience and found similar issues of a lack of correlation.[146] Despite these challenges, some consensus was reached that the dynamics of overcrowding in the department relate to a lack of bed capacity to manage 'surge' periods

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[139] S Trzeciak and E Rivers, "Emergency Department Overcrowding in the United States: an Emerging Threat to Patient Safety and Public Health", *Emerg Med J* 20, no. 5 (2003): 402-405.

[140] A Drummond, "No Room at The Inn: Overcrowding in Ontario's Emergency Departments", *Can J Emerg Med* 4, no. 2 (2002): 91-97.

[141] M Schull et al, "Emergency Department Crowding and Thrombolysis Delays in Acute Myocardial Infarction", *Ann Emerg Med* 44, no. 6 (2004): 577-585.

[142] M Bayley, "The Financial Burden of Emergency Department Congestion and Hospital Crowding for Chest Pain Patients Awaiting Admission", *Ann Emerg Med* 45, no. 2 (2005): 110-117.

[143] S Bernstein et al, "The Effect of Emergency Department Crowding on Clinically Oriented Outcomes", *Acad Emerg Med* 16, no. 1 (2009): 1-10.

[144] U Hwang and J Concato, "Care in the Emergency Department: How Crowded is Overcrowded?", *Academy Emerg Med* 11, no. 10 (2004): 1097-1101.

[145] K Raj et al, "National Emergency Department Overcrowding Study Tool is not Useful in an Australian Emergency Department", *EMA* 18, no. 3 (2006): 282-288.

[146] S Jones et al, "An Independent Evaluation of Four Quantitative Emergency Department Crowding Scales", *Acad Emerg Med* 13, no. 11 (2006): 1204-1211.

in the department, and that this may have been the result of management decisions to increase the efficient use of hospital bed towards and above 85% occupancy.[147]

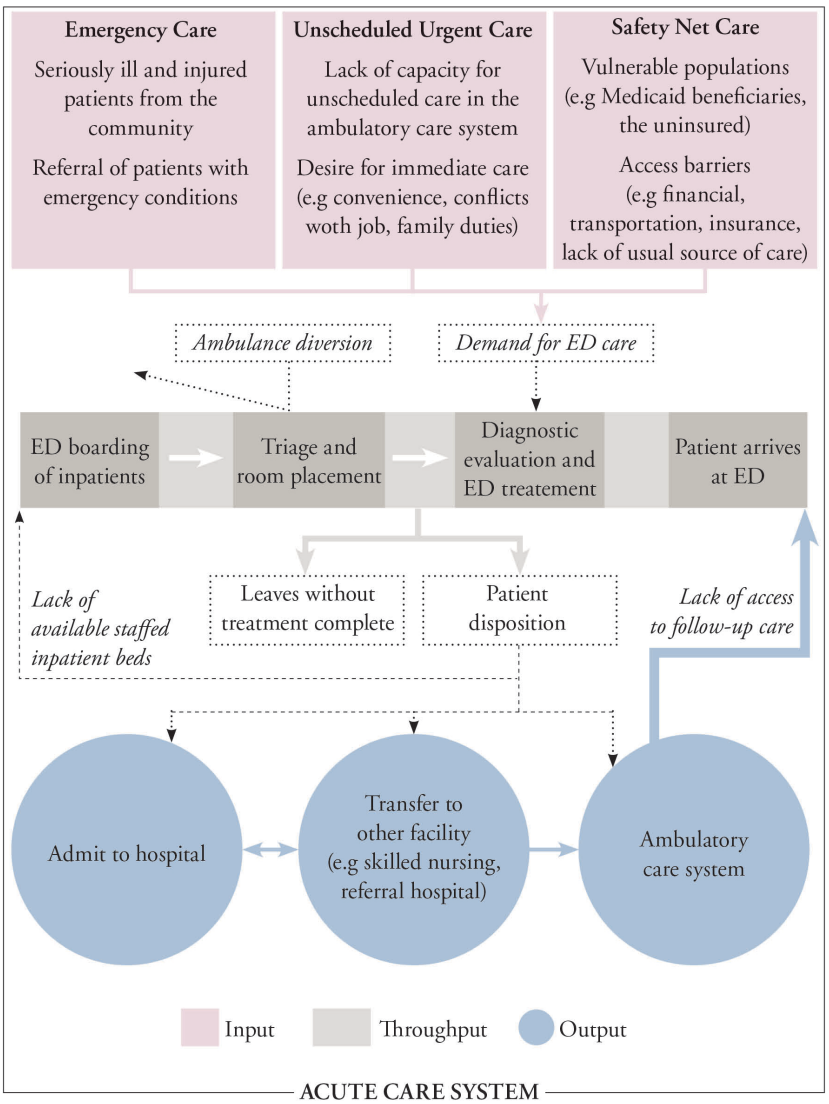

Figure 2.6: The Input-Throughput-Output Model of ED Patient Flow (*Adapted from Bernstein et al*[143]) [pink = input; grey = throughput; blue = output]

In the Bernstein review on the effects of overcrowding on quality dimensions, cited above, the authors identified the predominant conceptual model for determining the causes of overcrowding, via the flow of patients through ED, as the Input-Throughput-Output model of Asplin et al.[148] The model is cited over 600 times across literature concerned with Emergency Department overcrowding. The original authors of the model (Asplin et al) argue that it is a "practical framework on which an organized

[147] G Braitberg, "Emergency Department Overcrowding: Dying to get in?", *MJA* 187, no. 11/12 (2007): 624-625.

[148] Bernstein, "The Effect of Emergency Department Crowding", 1.

research, policy, and operations management agenda can be based to alleviate ED crowding" (Figure 2.6).[149]

If defining the problem of overcrowding was difficult, solving the problem of overcrowding has been described as "complex, expensive, and [debatable]".[150] The Input-Throughput-Output model offers solutions that tend to cluster around immediate response needs to reducing department 'boarding times', including increasing inpatient bed capacity; improving access to clinics for non-emergency patients and avoiding excessive elective surgical admissions; increasing staff numbers and/or reorganising treating teams to include dedicated clinical support staff; improving diagnostic services; and, coordinating diversions of incoming patients away from already crowded Emergency Departments[151] [152] [153] [154] [155] [156].

2.3.1.2 Responding to overcrowding: A health policy response

In parallel to research focused on hospital-centric solutions, the need for a health policy response was identified in the early 2000s in the US, the UK and Australia.[157] [158] [159] Of critical relevance to this inquiry is the UK Government report 'Reforming Emergency Care: First Steps to a New Approach', published by the Department of Health in 2001. In this policy paper, the UK Government outlined a rationale as to why there were growing problems with Emergency Department access and wait times, and set out a range of 'whole of health-care system reforms' that included financial alignment of

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[149] B Asplin et al, "A Conceptual Model of Emergency Department Crowding", *Ann Emerg Med* 42, no. 2 (2003): 173-180.

[150] Derlet and Richards, "Overcrowding in the Nation's Emergency Departments", 67.

[151] J Olshaker, "Managing Emergency Department Overcrowding", *Emerg Med Clin North Am* 27, no. 4 (2009): 593-603.

[152] J Olshaker and N Rathlev, "Emergency Department Overcrowding and Ambulance Diversion: The Impact and Potential Solutions of Extended Boarding of Admitted Patients in the Emergency Department", *The J Emerg Med* 30, no. 3 (2006): 351-356.

[153] S Schneider et al, "Rochester, New York: A Decade of Emergency Department Overcrowding", *Academ Emerg Med* 8, no. 11 (2001): 1044-1050.

[154] R Derlet, "Overcrowding in Emergency Departments: Increased Demand and Decreased Capacity", *Ann Emerg Med* 39, no. 4 (2002): 430-432.

[155] K Bond et al, "Frequency, Determinants and Impact of Overcrowding in Emergency Departments in Canada: A National Survey", *Healthcare Quarterly* 10, no. 4 (2007): 32-40.

[156] N Jayaprakash et al, "Crowding and Delivery of Healthcare in Emergency Departments: The European Perspective", *West J Emerg Med* 10, no. 4 (2009): 233-239.

[157] L Richardson, B Asplin and R Lowe, "Emergency Department Crowding as a Health Policy Issue: Past Development: Future Directions", *Ann Emerg Med* 40 (2002): 388-393.

[158] Braitberg, "Emergency Department Overcrowding: Dying to get in?", 624-625.

[159] M Cooke, "Emergency Medicine: Whole System is Responsible for Solving Overcrowding of Departments", *BMJ* 325, no. 7360 (2002): 389.

National Health Service funding for initiatives to reduce wait-times and overcrowding.[160] Of the four stated targets of the reforms, the fourth concluded:

By 2004 no-one to wait more than 4 hours in an A&E department from arrival to admission to a bed in the hospital, transfer elsewhere or discharge. The average length of waiting should fall to 75 minutes.[161]

In a follow-up policy paper, *Reforming Emergency Care: Practical Steps*, the Department of Health noted that "nearly 80% of all A&E attenders spend 4 hours or less in A&E… 87% of patients admitted via A&E who need a bed are found one within 4 hours of a decision to admit. But a minority still wait far too long. This is not good enough".[162] NHS user survey results were used to buttress this judgment, showing:

When people use the present emergency services in the NHS, they often find [t]hey have to wait too long for care and treatment at each stage within the emergency care system:

- to get an appointment to see a GP or for the GP to visit them at home

- for an ambulance to take them to hospital

- to be seen by a nurse or doctor when they arrive at hospital

- to have diagnostic tests taken, or for the results of those tests

- for drugs to be dispensed or to be told they can go home

- for a bed to be found on a ward if they need to be admitted to hospital

- for an assessment to allow them to be discharged from hospital

- for a domiciliary care package, or for nursing or residential care to be available[163]

In 2004, just three years after the initiation of the UK policy directives, including the 4 - Hour Rule and system reorganisation and funding realignment, wait times in excess of 4 - hours had dropped to just 4% of all patient presentations — down from 25% in 2001.[164] In addition to the "dramatic successes"[165] of the target achievement, patient satisfaction surveys found increased levels of public satisfaction with department experiences, and

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[160] Department of Health, *Reforming Emergency Care: First Steps to a New Approach Publication Number 25635* (London: The Crown, 2001), 2-5.

[161] ibid. 1.

[162] Department of Health, *Reforming Emergency Care: Practical Steps* (London: The Crown, 2001), available at http://webarchive.nationalarchives.gov.uk/20120106115617/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4125520.pdf .

[163] ibid. 3.

[164] A Oliver, *Reforming Emergency Care, Health Policy Monitor* (London: Bertelsmann Stiftung and the LSE, 2004).

[165] Bond et al, "Frequency, Determinants and Impact of Overcrowding in Emergency Departments", p38.

significant advances made in the skills mix of key personnel including nurses and paramedics.[166]

2.3.1.3 Early evaluation of the 4-Hour Rule

The authors of the 2004 UK Government evaluation of the *Reforming Emergency Care* policies claimed that "[a]s a consequence of the Department [of Health] actively managing Trusts' performance, the percentage of patients being discharged or admitted from A&E in under four hours has risen from 77% in September 2002 to 94.6% in September 2004".[167] This statement consolidated a view that bureaucratic intervention was at the core of success. In 2005, the 'target' transformed to a national *standard*, increased from 95% to 98%, against which all health districts were measured, and to which performance payments and penalties were linked.[168]

Subsequent alternative analysis of the Department of Health data suggested that while "on average 95.9% of patients… spent less than four hours in A&E", only 70 of the around 160 NHS Trusts (health districts) with Emergency Departments were achieving benchmarks, with wide variance in performance, inconsistencies between data reported to the department and clinician experience, and overt manipulation of data in a minority of health districts.[169][170]

Reductions in hospital waiting times had also not come cheaply. It is estimated that the UK Government increased spending on Emergency Departments in the NHS by £820 million between 1998 and 2007, as part of an investment of around £1 billion a year on emergency care services.[171] This was part of a national increase in investment in health from 6.9% of GDP in 2000 to 9.4% of GDP in 2010.[172]

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[166] National Audit Office Comptroller and Auditor General, *Improving Emergency Care in England Document number HC1075* (London: House of Commons, 2004).

[167] Department of Health, *Department of Health: Improving Emergency Care in England Hc 445* (London: House of Commons, 2005), 5.

[168] G Hughes, "Four Hour Target for EDs: The UK Experience", *EMA* 22, no. 5 (2010): 368-373.

[169] Department of Health, *Department of Health: Improving Emergency Care in England*, 3.

[170] P Jones and K Schimanski, "The Four Hour Target to Reduce Emergency Department 'Waiting Time': A Systematic Review of Clinical Outcomes", *EMA* 22, no. 5 (2010): 391-398.

[171] ibid. 391-398.

[172] J Cylus et al, "United Kingdom: Health System Review", *Health Systems in Transition* 17, no. 5 (2015), xix.

2.3.1.4 Controversies in evaluation of the 4-Hour Rule

Independent researchers continue to evaluate the implementation and outcomes of the 4-Hour Rule in the UK and Australia, in parallel with ongoing government evaluations. Two key reviews highlight a growing uncertainty about the benefits and costs of the intervention.

Hughes' UK review report was published in *Emergency Medicine Australasia* just prior to the National Health Agreement that set a national standard for Australia in 2011, and was one of the first reviews in the literature on the 4-Hour Rule in the UK. Hughes' report provided a timely overview of nearly a decade of experience with the UK's 4-hour target, the impact of which was shown to be widespread and deep. He quotes a National Audit Office report of 2004 in which, among other outcomes, it was reported:

- *The target had increased senior management's time devoted to managing ED*
- *Both high and low volume departments had achieved reductions in delays*
- *Many Trusts [health districts] had achieved reductions in average total time, some to well below 2 h*
- *Focusing on maximum rather than average times carries risks; patients might wait a long time for a simple procedure, those in danger of breaching the target are seen before those in greater clinical need and once a patient breaches 4 h, there might be less incentive to expedite their admission or transfer, particularly if there is pressure on beds*
- *Most patients with minor injury or illness were dealt with in less than 4 h, whereas patients with more serious conditions or needing admission and older patients experienced more delays than others*
- *One-third of mental health patients spent more than 4 h in ED accounting for 10% of the delays in some trusts but only 1.5% of their attendances.*[173]

Hughes reiterates the limited, though troubling, data that a minority of Trusts had manipulated target performance, in order to achieve financial incentives, while at the same time serious harm to patients was occurring. The most infamous of these was the Mid-Staffordshire scandal, in which falsified data and clinical decision-making were associated with a spike in deaths. Hughes cites two further papers that confirm clinical suspicion that patients were experiencing a spike in activity in their care in the last 20 minutes before a 'breach' of the 4-Hour Rule. This activity was determined to be target-led and

[173] Hughes, "Four Hour Target for EDs: The UK Experience", 368-373.

not clinically led.[174] [175] Hughes concludes, equivocally, that "[r]eaders will need to decide for themselves the merits or not of the ED four hour target and its relevance to Australasia, and in particular how it will relate to improvements in whole-system processes and ultimately patient care".[176]

Silk reviewed evidence of the impact of the NEAT following the first five years of operation in the Australian context. Silk reports that in response to the investment of additional financing to support the national targets, hospitals across Australia undertook a range of process changes that included:

- improving the efficiency of discharges throughout the hospital
- rapid assessment Emergency Department teams or senior physicians
- new IT patient management systems
- improved processes to increase the speed at which patients were moved to the ward once need for admission was recognised
- nurse-initiated Emergency Department interventions
- improved access and timeliness of medical imaging, pathology, pharmacy and allied health services
- designated short-stay (24-48 hour admission) units contained in or adjacent to the department
- designated short-stay bridging units for rapid assessment and care planning post-Emergency Department but prior to home ward admission
- use of fast-track services to see low-acuity patients with enhanced primary care contact nurses and physiotherapists and improvements to free or low-cost primary care outside hospitals.[177]

Based on her review of the Australian research literature on the outcomes of these process changes between 2010 and 2015, Silk concludes that the NEAT targets:

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[174] S Gainsbury, "Huge Contrast Found Between UK Nations", *Health Services Journal* (Aug 28, 2008), 4-5.

[175] S Mason, J Nicholl, and T Locker, "Targets Still Lead Care in Emergency Departments", *BMJ* 341 (2010): c3579.

[176] Hughes, "Four Hour Target for EDs: The UK Experience", 368-373.

[177] Silk, "The National Emergency Access Target", 5.

- had incentivised whole-of-hospital responses to access block but with limited impact on admitted patients;
- were not achieved in any jurisdiction since 2013-14, but the results showed significant improvements compared with baseline;
- resulted in a surge in the use of short-stay units attached to departments to allow more time for investigations but with the 'clock stopped';
- were equivocally supported by a limited number of hospitals demonstrating reduced all-cause mortality; and
- may have incentivised gaming of times and excessive activity in the last 30 minutes before 'breach', with at least one hospital found to have deliberately falsified targets for financial gain.[178]

In addition to research focussed on process change and epidemiological outcomes in relation to the 4-Hour Rule, a small body of research began evaluating the impact on clinicians, both in Australia and the UK. In Australia, one of the major evaluations was stimulated by media reports of widespread dissatisfaction and clinician stress following introduction of the targets in Western Australia in 2009.[179]

2.3.1.5 The clinicians' experience of the 4-Hour Rule

There are similarities in the experience of clinicians in both the UK and Australia of the changes brought about by the target introduction. A British Medical Association (BMA) survey in 2005, conducted in 163 of 200 UK A&Es, found 80% of the departments reported clinical concerns related to pressure placed on staff to see patients within four hours, with around half (52%) reporting patients were moved to inappropriate areas or wards; 40% stating patients had been discharged before they were adequately assessed or stabilised; and 27% describing that care of the seriously ill or injured was compromised because of the pressure to meet the 4-hour target.[180]

A follow-up survey by the BMA, reported in 2007, found continued pressures on medical and clinical staff to try to maintain the 98% 4-hour target. The survey cited the main

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[178] ibid. 7-10.

[179] ABC News, *Hospital Four Hour Rule Working but at a Cost*, (Jan 25, 2012) available at http://www.abc.net.au/news/2012-01-25/hospital-four-hour-rule-working/3792244 .

[180] British Medical Association, *Government's A&E Target Puts Patient Care At Risk, Says BMA Survey*, BMA Press Releases, (Mar 14, 2005), available at http://web.bma.org.uk/pressrel.nsf/wall/B1D64FAE775DD39580256FC100374CAD?OpenDocument .

pressures as (a) a lack of inpatient beds due to cuts by health administrations trying to balance their spreadsheets; (b) patients being moved to inappropriate areas or wards; and (c) patients being discharged before adequate assessment and safety was established.[181]

In contrast to these findings, via an unspecified number of semi-structured interviews and Trust surveys, the National Audit Office determined that the use of a time-based target had become "widely accepted" amongst clinicians, noting that data were not available to conclusively support concerns about targets trumping clinical need and that there was "general consensus" that the target had the "beneficial effect [of[focusing attention on reducing delays".[182]

Silk's review of the Australian experience does not include research on the impact of the 4-Hour Rule on clinicians' experiences in the Emergency Department, which reflects a significant lack of research on this important impact of the intervention. This is especially so, given that the UK experience suggests that positive reports based on objective data are not supported with equally positive clinical experience in achieving those data. Perhaps even more compelling, as to why the impact on clinicians should be a high research priority, are the findings from the Stokes Review of the 4-Hour Rule, on behalf of the Western Australian Department of Health in 2011, which reports staff were stressed and angry, and experiencing bullying as a result of the implementation of the target.[183]

Beyond the Stokes Review, a MEDLINE search using the keyword phrase 'National Emergency Access Target' returned 35 original and review papers related to any scholarship about the NEAT or 4-Hour Rule, with a subset of only five original research papers (i.e. not reviews or meta-analyses) that evaluate or report any kind of impact on clinical staff.[184] These include:

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[181] British Medical Association, *A&E Doctors Warn They Are Struggling To Cope, Says BMA Report*, BMA Press Release Archives (2007), available at http://web.bma.org.uk/pressrel.nsf/wall/9ED1DBBC92754D1980257265006134D9?OpenDocument .

[182] National Audit Office Comptroller and Auditor General, *Improving Emergency Care in England*, 12.

[183] Stokes, *Four Hour Rule Program Progress and Issues Review*, 19-20.

[184] See Appendix 3

- A study examining the effect of senior clinician-led assessment and treatment that references a need in future research to assess staffing and skill-matrix structures in clinical service redesign for the NEAT.[185]
- An editorial from an experienced emergency physician in a busy tertiary hospital who laments falling standards of diagnostics skills in registrars and new Fellows; loss of important aspects of the patient's history and care coordination; and a lack of correlation between time-based target achievement and broader quality care indicators. The physician blames all of these consequences on the NEAT.[186]
- A study on a whole-of-hospital three-year project to redesign clinical services to improve NEAT in which success was attributed in large part to the involvement of clinicians in all stages of design, implementation, monitoring and feedback.[187]

Cameron et al, bemoan this lack of data on clinician impact and staff acceptance as these data are necessary, albeit difficult to obtain, dimension of performance outcomes when assessing systematic interventions such as the NEAT in the Australian context.[188] The authors echo the pejorative view that the NEAT was "externally imposed" and questioned the rationale for such an imposition "to make us do our job of offering safe and efficient care according to patient need".[189]

2.3.2 Summary of the context for the implementation of a 4-Hour Rule

The importance of hospital and policy responses to the protracted crisis of Emergency Department overcrowding, especially in the setting of publicly funded emergency health-care systems, should not be underestimated in view of the significant morbidity and mortality associated with prolonged departmental wait times. The British experience, given its maturity compared with the Australian experience of implementing time-based targets, has a slightly better representation of data on the impact of the 4-Hour Rule from the clinician perspective, and most of it is jaundiced.

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[185] R Davis, "Senior Work-Up Assessment and Treatment Team in an Emergency Department: A Randomised Control Trial", *EMA* 26, no. 4 (2014): 343-349.

[186] D Green, "Is National Emergency Access Target Dumbing Down Emergency Physicians?", *EMA* 26, no. 3 (2014): 305-307.

[187] L Maumill et al, "The National Emergency Access Target (NEAT): Can Quality go with Timeliness?", *MJA* 198, no. 3 (2013): 153-157.

[188] P Cameron, B Mitra, and D Smit, "The National Emergency Access Target Performance and All That!!", *EMA* 29, no. 3 (2017): 260-261

[189] ibid, 260.

In Australia, despite two extensive review papers of the impact of the NEAT, almost all the literature is focussed on the performance of process-oriented outcomes across the Emergency Department and hospital system. This is despite the explicit intention of the intervention to change practitioner behaviour, and the Stokes Review from Western Australia reporting stressed and angry staff who were experiencing bullying as a result of implementing the 4-Hour Rule.

The relevant literature indicates that little has been done to investigate the impact on practitioners of an administrative intervention such as the 4-Hour Rule in Australia, leaving a large and important gap to be filled. This inquiry goes a small way to beginning to fill that gap. The following section undertakes a broader examination of why understanding the impact of administrative interventions on medical practitioners is a critical domain of evaluating the performance of health systems and the health and care of the patients they serve.

2.3.3 The patient-doctor relationship in context

As part of building a knowledge base for later theorising regarding doctors' perceptions of the impact of the 4-Hour Rule in clinical encounters in Emergency Departments, it is worthwhile examining evidence that administrative interventions can actually impact on clinical encounters through the patient-doctor relationship. This section reviews the evidence in support of the proposition that:

(a) given physicians report an effect of the 4-Hour Rule on their clinical experiences and performance in the workplace, as discussed in Section 2.3.1.5,

(b) and because of their causal powers, and responsibilities, within the patient-doctor relationship,

(c) the administrative intervention can be anticipated to have direct and indirect effects on the quality and function of the relationship in terms of health-care outcomes.

2.3.3.1 The patient-doctor relationship in the context of health-care

Donabedian himself attests to an unparalleled and privileged systemic position of the patient-doctor relationship in contributing to the quality performance of health-care.[190] In essence, why else does an emergency health-care structure exist, if not to bring the

[190] Donabedian, *An Introduction to Quality Assurance in Health Care*, 16-20.

suffering patient into relationship with the medical sciences via an encounter with a medical doctor in order to restore health or, at the very least, relieve suffering? Goold and Lipkin argue that the relationship remains the "keystone of care" as the space in which diagnosis, intervention, healing and support are mediated.[191] 'Relationship', as a concept, moves beyond transaction to describe an "abstraction encompassing the activities of two interacting systems or persons" and their relata as the patient-doctor relationship evolved across the centuries towards a more equalised view of personhood between its actors.[192]

The foundations of such characterisations are not without significant philosophical counter argument and challenge, as Pellegrino articulates:

[s]ome regard medicine primarily as a body of knowledge and confine it within the perimeters of a predetermined set of disciplines. Others define medicine in terms of its end or purpose or some predetermined concept of health for which medicine is the means. Still others would define medicine as the negotiated outcome of the physician-patient relationship.[193]

In Pellegrino's first two predicates, the patient-doctor relationship may simply be necessary for (a) execution of professional services and knowledge development primarily for the needs of practitioners, or (b) enacting a marketplace transaction of goods and services for a fee for the proposed benefit of practitioner and consumer. Pellegrino espouses a view that the relationship between doctor and patient is the supra-ordinal organising structure of health-care, a conceptualisation echoed in further collaboration between Pellegrino and Thomasma, who conclude that "[h]uman need seeks fulfilment. This is what the physician presents herself as equipped and committed to provide: fulfilment and satisfaction of the ontological need for healing. This is what the physician *professes*… a healing relationship to the patient [that] is co-determined by [a curative intent] and the interrelated phenomena of human embodiment".[194]

Smith and Newton contend that a mutuality of intention defines the origins of the patient-doctor relationship, which itself precedes any particular manifestation of health-care, be it GP clinic or hospital Emergency Department.[195] Awareness and sensitivity to

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[191] S Goold and M Lipkin, "The Doctor–Patient Relationship Challenges, Opportunities, and Strategies", *J Gen Int Med* 14, no. Supp 1 (1999): S26-S33.

[192] R Kaba and P Sooriakumaran, "The Evolution of the Doctor-Patient Relationship", *Int J Surg* 5, no. 1 (2007): 57-65.

[193] E Pellegrino, "The Healing Relationship: The Architectonics of Clinical Medicine, the Clinical Encounter", *Phil of Med* 14 (1983): 154.

[194] D Thomasma, *The Influence of Edmund D. Pellegrino's Philosophy of Medicine* (Dordrecht: Springer Science & Business Media, 2013), 178.

[195] D Smith and L Newton, "Physician and Patient: Respect for Mutuality", *Theoretical Medicine* 5 (1984): 43-60.

this mutuality on the part of the physician have been correlated with higher levels of moral reasoning and better clinical performance.[196]

Individual clinician performance in the patient-doctor relationship can be subsequently shown to have a positive influence on health outcomes for patients.[197] [198] [199] [200] [201] Collectively, positive health outcomes related to clinical performance in the patient-doctor relationship are shown to be determined by the quality of the communication between doctor and patient facilitating "a good interpersonal relationship… exchange of information, and including patients in decision making".[202] Determining the quality of the communication within the patient-doctor relationship is not without controversy and in one systematic review it was found that the vast majority of reported measures used to assess the quality of communication were, themselves, of poor quality.[203] In addition, two systematic reviews of the literature that link physician performance in the patient-doctor relationship with improved health outcomes exclude the majority of publications on the grounds of inadequate design according to the standards of randomised control trials. The two reviews do, however, attribute a small to moderate — but significant — impact of physician performance in clinical communication on some health outcomes based on the included studies.[204] [205]

Clinical communication is only one aspect of a number of lines of inquiry taken up on the patient-doctor relationship. Research into patient experience supports the conclusion that a good patient experience facilitated by a 'therapeutic alliance' with the clinician is

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[196] C Hoare, ed., *Handbook of Adult Development and Learning* (Verlag: Oxford University Press, 2006), 511-512.

[197] S Shrivastaava, P Shrivastaava, and J Ramasamy, "Exploring the Dimensions of Doctor-Patient Relationship in Clinical Practice in Hospital Settings", *Int J Health Policy Management* 2, no. 4 (2014): 159-160.

[198] C Williams et al, "The Doctor-Patient Relationship: from Undergraduate Assumptions to Pre-Registration Reality", *Medical Education* 35 (2001): 743-747.

[199] HC Weng et al, "Doctors' Emotional Intelligence and the Patient-Doctor Relationship", *Medical Education* 42 (2008): 703-711.

[200] A Weymiller et al, "Helping Patients with Type 2 Diabetes Mellitus make Treatment Decisions: Statin Choice Randomized Trial", *Arch Intern Med* 167 (2007): 1076-1082.

[201] Z Di Blasi et al, "Influence of Context Effects on Health Outcomes: A Systematic Review", *The Lancet* 357 (2001): 757-762.

[202] J Ha and N Longnecker, "Doctor-Patient Communication: A Review", *Oschner Journal* 10, no. 1 (2010): 38-43.

[203] J Zill et al, "Measurement of Physician-Patient Communication — A Systematic Review", *PLoS One* 9, no. 12 (2014): e112637.

[204] J Kelley et al, "The Influence of the Patient-Clinician Relationship on Healthcare Outcomes: A Systematic Review and Meta-Analysis of Randomized Controlled Trials", *PLoS One* 9, no. 4 (2014): e94207

[205] D Martin, J Garske, and K Davis, "Relation of the Therapeutic Alliance with Outcome and Other Variables: A Meta-Analytic Review", *Journal Consulting and Clinical Psychology* 68, no. 3 (2000): 438-450.

positively associated with a range of important health outcomes including treatment, prevention and self-agency of health management.[206] In addition, other literature reports on the quality of shared decision-making in the patient-doctor relationship and its positive effects on some clinical outcomes.[207] [208] [209] [210] [211]

Another richly researched aspect of the patient-doctor relationship is the role that trust plays between patient and physician and the effect on health outcomes. Brennan et al undertook a systematic review of patient-doctor relationship trust and confirm that trust in the health-care provider remains an important determinant of health outcomes.[212] Interestingly, the authors also note that only one of over 500 published papers on patient-doctor relationship trust reported on *physicians'* levels of trust in their patients. They conclude that this is a major gap in the literature, especially in view of the role of doctors as "socially licensed adjudicators on contested or contestable claims by patients to illness, the need for treatment, time off work, disability benefits and so on".[213]

The evidence reviewed to this point suggests that the patient-doctor relationship is recognised as being: (1) a supra-ordinal prerequisite and catalyst for health-care organisation based on a mutuality of intentions, and (2) influential in determining outcomes in some health areas as a function of the performance of physicians as communicators. Given that the administrative intervention of the 4-Hour Rule is designed to impact at the relational level of hospital activity (that is, when the encounter between patient and practitioners occurs, and how much time is spent on it), one can anticipate that there may be important effects of the interventions on health outcomes *as a function of the performance* of the patient-doctor relationship. Assessing any impact on the function of the patient-doctor relationship from the doctor's perspective is logical given

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[206] C Doyle, L Lennox, and D Bell, "A Systematic Review of Evidence on the Links Between Patient Experience and Clinical Safety and Effectiveness", *BMJ Open* 3 (2013): e001570.

[207] C Donaldson, P Lloyd, and D Lupton, "Primary Health Care Consumerism Amongst Elderly Australians", *Age And Ageing*, 20, No. 4 (1991): 280-286.

[208] M Raven et al, "Vulnerable Patients' Perceptions of Health Care Quality and Quality Data", *Med Decision Making* 32, no. 2 (2012): 311-326.

[209] H Van De Bovenkamp, M Trappenburg, and K Grit, "Patient Participation in Collective Healthcare Decision Making: The Dutch Model", *Health Expectations* 13, no.1 (2009): 73-85.

[210] S Poochikian-Sarkissian et al, "Examining the Relationship Between Patient-Centred Care and Outcomes", *Canadian Journal of Neuroscience Nursing* 32, no. 4 (2010): 14-20.

[211] W Godolphin, "Shared Decision-Making", *Healthcare Quarterly* 12 (2009): e186-e190.

[212] N Brennan et al, "Trust in The Health-Care Provider–Patient Relationship: A Systematic Mapping Review of the Evidence Base", *Int J Qual Health Care* 25, no. 6 (2013): 682-688.

[213] ibid. 687.

that, while the patient will be materially impacted, it is the doctor whose behaviour and work environment are targeted by the intervention, and in whom is vested decision-making power about health-care action in the Emergency Department.

2.3.3.2 Physicians' perceptions of the patient-doctor relationship

There is comparatively clear evidence that doctors view the patient-doctor relationship as an evolving one that looks considerably different in contemporary practice compared with only 60 years earlier.[214] A tension lies in the evolution of the dialectic between benevolent paternalism and patient autonomy, and Emanuel and Emanuel, and Truog characterise this tension as one of the most prominent features of the changing quality of the patient-doctor relationship.[215] [216] This tension turns on two key, mutually inclusive, priorities: the balance of power between patient and doctor, and the characterisation of the social contract between the recipient and provider of health-care. In the former, Western biomedical discourse on power in the patient-doctor relationship adjusted to major sociological changes in the relationship between citizen and institution, beginning in the 1960s,[217] to include the possibility of greater equality. Rothman argues that civil-liberties-minded lawyers did more than the 'bioethics' discourse of medicine to force the reframing of the relationship between individuals and 'constituted authority' (such as families, schools and governments) through legal actions.[218] The historical framework of the authoritarian physician exercising professional power over an obedient patient disintegrated in the face of, as one example, law institutions prosecuting cases against physicians for failing to properly inform their patients of the risks of procedures.[219] These legal precepts became, collectively, statutes of 'informed consent', evolving from questions of culpability and compensation, towards increasingly moral questions about autonomous decision-making by patients.[220] The ethical turn towards these questions promoted intensive reflections on the phenomena of patient autonomy which Tauber

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[214] R Kaba and P Sooriakumaran, "The Evolution of the Doctor-Patient Relationship", *Int J Surg 5* (2007): 57-65.

[215] E Emanuel and L Emanuel, "Four Models of the Physician-Patient Relationship", *JAMA* 267, no. 16 (1992): 2221.

[216] R Truog, "Patients and Doctors — The Evolution of a Relationship", *NEJM* 366 (2012): 581-585.

[217] J Balint, and W Shelton, "Regaining the Initiative: Forging a New Model of the Patient-Physician Relationship", *JAMA* 275, no. 11 (1996): 887-891.

[218] D Rothman, "The Origins and Consequences of Patient Autonomy: A 25-Year Retrospective", *Health Care Analysis* 9 (2001): 255-264.

[219] J Will, "A Brief Historical and Theoretical Perspective on Patient Autonomy and Medical Decision Making: Part II: The Autonomy Model", *Chest* 139, no. 6 (2011) 1491-1497.

[220] R Faden and T Beauchamp, *A History and Theory of Informed Consent* (New York: Oxford University Press, 1986), 3.

argues have "dominated the debate on the moral foundations of medical practice and research".[221]

In parallel to the biomedical discourse growing in the 1960s and 1970s, Contract Theory emerged, from the work of John Rawls, as a complementary model for characterising a structure of relations based on justice,[222] including the patient-doctor relationship.[223] From the contractarian perspective of justice, the structural inequalities of social systems, and not just those argued against within the 'old' model of the patient-doctor relationship, need to be addressed in order to improve health and wellbeing. The Economic and Social Council of the WHO suggest that health becomes a human right, inalienable from other basic rights that engender responsibilities to states and entitlements to citizens — in this case, access to effective and acceptable health-care systems and the professionals who work within them.[224]

The shift, in the context of wider social dynamics, in the balance and exercise of power towards the patient has been viewed favourably among physicians from different medical cultures around the world.[225] [226] [227] However, there are arguments to suggest that a variety of ethical stances are required to meet individual patient and family needs. For example, the degree to which autonomy is actualised within a health-care relationship is debatable, especially in situations in which patients are very ill and the health-care issues are complex.[228] [229]

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[221] A Tauber, "Historical and Philosophical Reflections on Patient Autonomy", *Health Care Analysis* 9, no. 3 (2001): 299-319.

[222] J Sterba, "Toulmin to Rawls", Ch 13 in *Ethics in the History of Western Philosophy,* eds. R Cavalier, J Gouinlock, and J Sterna (UK: Palgrave Macmillan, 1989), 399-421.

[223] H Brody, "The Physician-Patient Relationship: Models and Criticisms", *Theoretical Medicine* 8, no. 2 (1987): 205-220.

[224] Economic and Social Council, *The Right to the Highest Attainable Standard of Health: Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social, and Cultural Rights* (Geneva: WHO, 2000).

[225] L Murgic et al, "Paternalism and Autonomy: Views of Patients and Providers in a Transitional (Post-Communist) Country", *BMC Med Ethics* 16 (2015): 65.

[226] R Lawrence and F Curlin, "Autonomy, Religion and Clinical Decisions: Findings from a National Physician Survey", *J Med Ethics* 35, no. 4 (2009): 214-218.

[227] A Jafarey, and A Farooqui, "Informed Consent in the Pakistani Milieu: The Physician's Perspective", *BMJ Medical Ethics* 31, no. 2 (2002): 93-96.

[228] S Sherwin, "A Relational Approach to Autonomy in Health Care", in *The Politics of Women's Health: Exploring Agency and Autonomy,* ed. S Sherwin (Philadelphia: The Feminist Health Care Ethics Research Network, Temple University Press, 1998), 24-26.

[229] P Qualtere-Burcher, *Rethinking the Doctor-Patient Relationship: A Physician's Philosophical Perspective*, *PhD Dissertation*, (University of Oregon Graduate School, 2011).

Literature also indicates that doctors can struggle with managing 'difficult' patient-doctor relationships, just as may happen with any other forms of relationship in the world. The nature of the difficulty can vary, from purely personal reasons relevant to the internal world of the doctor, to professional challenges in communicating treatment options and plans, or external challenges presented by a patient's family.[230] Greenfield et al find that physicians can feel seriously challenged in the patient-doctor relationship when patients seek second opinions, perceiving these as a challenge to professional autonomy and even a reason to distrust a patient.[231]

Despite these reported difficulties, a large survey that compares patient and physician views on the patient-doctor relationship found a high degree of satisfaction with patient-doctor relationships from the patient perspective.[232] Of particular interest for this inquiry, this survey reports that both doctors and patients acknowledge a lack of time available to doctors to provide the highest quality of care (89% and 86% respectively). 90% of patients identified the patient-doctor relationship as the most essential element of the health-care system.

Another interesting insight is offered by Bell et al, in a study on the effects of patients reading their doctor's clinical notes about themselves. Clinical notes on patients have historically served only a clinical purpose: communicating among staff and ensuring doctors' orders were implemented.[233] Patients were never intended to be stakeholders. In the study, doctors described initial concerns that patients would report perceived errors in the notes and 44% expected patients to disagree with the notes. However, only 7% of patients reported inaccuracies and 85% were happy with the remedy. After one year, just over half of the doctors felt that being transparent with note-making had improved trust and patient satisfaction.[234]

The doctor is not immune from harm within the patient-doctor relationship, especially when things go wrong. Goto and Noda found the vast majority of endovascular

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[230] E Vegni, S Visioli and E Moja, "When Talking to the Patient is Difficult: The Physician's Perspective", *Community Med* 2, no. 1 (2005): 69-76.

[231] G Greenfield, "Patient-Physician Relationships in Second Opinion Encounters - The Physicians' Perspective", *Soc Sci Med* 75, no. 7 (2012): 1202-1212.

[232] The Physicians Foundation, "The Physicians Foundation 2017 Patient Survey", *The Physicians Foundation* (Oct 4, 2017).

[233] T Kuhn et al, "Clinical Documentation in the 21st Century: Executive Summary of a Policy Position Paper From the American College Of Physicians", *Ann Intern Med* 162, no. 4 (2015): 301-303.

[234] S Bell et al, "When Doctors Share Visit Notes with Patients: A Study of Patient and Doctor Perceptions of Documentation Errors, Safety Opportunities and the Patient-Doctor Relationship", *BMJ Qual Safety* 26, no. 4 (2017): 262-270.

surgeons involved in adverse outcomes for patients had experienced multiple signs and symptoms of psychic trauma and troubling use of intellectualisation to avoid feelings of grief that, paradoxically, made grief worse.[235] This finding is corroborated in a review by Sablik et al, in which a very high rate of physician burnout was attributed by doctors to breakdowns in patient-doctor relationships.[236] This view is reiterated in work by Shanafelt et al, who investigated physician burnout in the US and found indications that the emotional investment required from doctors to develop good patient-doctor relationships is compromised in the current health-care climate of diminishing time with patients and increased non-clinical demands.[237]

That doctors have strong responses to their patients, and to the effects of their actions on patients and the quality of the patient-doctor relationship, has been well understood for some time. In wonderfully prosaic terms, Ballint describes this as a function of the recognition that:

…the most frequently used drug in general practice was the doctor himself… Unfortunately we soon discovered that as yet this important drug had no pharmacology. No textbook advises the doctor as to the dosage in which he should prescribe himself, in what form, and how frequently. Nor is there any literature on the hazards of this kind of medication…[238]

The challenges and joys of physicians' experiences with their patients are also found in the anecdotal stories of doctors who publish their personal experiences in blogs and books. A particularly poignant example of this is the work of Lerner, who recounts the experience of the patient-doctor relationship from two practitioners' perspectives: his own in contemporary medicine, and that of his father, practising decades before and chronicled in a personal diary.[239] It gives an idiographic historical account of the profound changes in doctors' attitudes towards their ethical approach to patients and their role in the patient-doctor relationship. The small amount of empirical research in this domain is important, and points to higher doctor satisfaction, better productivity and

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[235] K Goto and M Noda, "Editorial: Grieving Over Complications Associated with Neuro-Endovascular Treatment", *Interventional Neuroradiology* 7, no. 3 (2001): 181-190.

[236] Z Sabilik, A Samborska-Sabilik and J Drozdz, "Universality of Physicians' Burnout Syndrome as a Result of Experiencing Difficulty in Relationship with Patients", *Archives Med Sci* 9, no. 3 (2013): 398-403.

[237] T Shanafelt et al, "Burnout and Satisfaction with Work-Life Balance Among US Physicians Relative to the General US Population", *Arch Int Med* 172, no. 18 (2012): 1377-1385.

[238] M Balint, "The Doctor, His Patient, and The Illness", *The Lancet* 265, no. 6866 (1955): 683-688.

[239] B Lerner, *The Good Doctor: A Father, a Son, and the Evolution of Medical Ethics* (Boston: Beacon Press, 2014).

fewer complaints from patients when doctors have positive relationships with their patients.[240] [241]

2.3.3.3 Administrative interventions and the patient-doctor relationship

This final section about the patient-doctor relationship reviews literature that specifically investigates the effects of administrative interventions on the patient-doctor relationship, as opposed to their effects on health outcomes or other performance variables.

A comprehensive search of international literature (Google Scholar, MEDLINE and EBSCO databases) for evidence of literature on the impact of administrative interventions on the patient-doctor relationship highlights that there is a dearth of literature upon which to base any hypothetical models of interactions. In 2004, Griffin et al claimed to have undertaken the only systematic review on research involving interventions directed at changing the interaction between patients and practitioners. Importantly, of the included studies, only low-level administrative interventions were identified, such as the use of pre-interview pamphlets and educational courses. These interventions activated the patient, changed the approach of the doctor or did both.[242]

There is some research to suggest that administrative interventions via market reforms, such as the use of electronic health records and health information online, collecting and reporting of patient satisfaction data, changes in payment methods, medical school curriculum design, and processes to improve and maintain continuity of care, can all have

[240] D Roter et al, "Communication Patterns of Primary Care Physicians", *JAMA* 277, no. 4 (1997): 350-356.

[241] M Stewart, "Reflections on the Doctor–Patient Relationship: from Evidence and Experience", *Br J Gen Prac* 55, no. 519 (2005): 793-801.

[242] S Griffin et al, "Effect on Health-Related Outcomes of Interventions to Alter the Interaction Between Patients and Practitioners: A Systematic Review of Trials", *Ann Fam Med* 2, no. 6 (2004): 595-608.

an impact on the patient-doctor relationship for better and worse.[243] [244] [245] [246] [247] [248] [249] Freeborn asserts that, based on his research into physician satisfaction and burnout, administrative interventions that aim to increase a doctor's sense of control over their professional work, and that enhance social supports, are most likely to improve practitioner performance and wellbeing.[250]

Reeves et al report a systematic review of administrative interventions aimed at increasing inter-professional education (IPE), for example, using interdisciplinary education programs in hospital departments. The authors report generally positive results on "Emergency Department culture and patient satisfaction; collaborative team behaviour and reduction of clinical error rates for Emergency Department teams; management of care delivered to domestic violence victims; and mental health practitioner competencies related to the delivery of patient care".[251] The interventions were not assessed specifically for impact on the patient-doctor relationship. As with any systematic review, the authors report that many positive studies were excluded for using non-rigorous methods (that is, not randomised controlled trials) or not reporting 'objective' data, "making it difficult to attribute reported changes directly to IPE".[252]

Pratt et al report on a national public health intervention that targeted a selected group of 58,000 people in the community, and asked them to make a commitment to speak to their doctor about a range of health-related issues. The authors report evidence that posting educational material to patients generated positive responses that increased the likelihood

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[243] D Blumenthal, "Effects of Market Reforms on Doctors and their Patients", *Health Affairs* 15, no. 2 (1996): 170-184.

[244] A Shack and S Reis, "The Impact of Electronic Medical Records on Patient–Doctor Communication During Consultation: A Narrative Literature Review", *J Eval Clin Prac* 15, no. 4 (2009): 641-649.

[245] J Sitzia and N Wood, "Patient Satisfaction: A Review of Issues and Concepts", *Soc Sci Med* 45, no. 12 (1997): 1829-1843.

[246] E Murray et al, "The Impact of Health Information on the Internet on Health Care and the Physician-Patient Relationship: National U.S. Survey among 1.050 U.S. Physicians", *J Med Internet Res* 5, no. 3 (2003): e17.

[247] C Christianson et al, "From Traditional to Patient-Centered Learning: Curriculum Change as an Intervention for Changing Institutional Culture and Promoting Professionalism in Undergraduate Medical Education", *Academic Med* 82, no. 11 (2007): 1079-1088.

[248] S Pearson and L Raeke, "Patients' Trust in Physicians: Many Theories, Few Measures, and Little Data", *JGIM* 15, no. 17 (2000): 509-513.

[249] C Walraven et al, "The Association Between Continuity of Care and Outcomes: A Systematic and Critical Review", *J Eval Clin Med* 16, no. 5 (2010): 947-956.

[250] D Freeborn, "Satisfaction, Commitment, and Psychological Well-Being among HMO Physicians", *West J Med* 174, no. 1 (2001): 13-18.

[251] S Reeves et al, "Interprofessional Education: Effects on Professional Practice and Health Care Outcomes", *The Cochrane Library*, Iss. 4 (2009): 1-21.

[252] ibid. 3.

of the person taking up the relevant health intervention.[253] The study did not report on quality indicators of the patient-doctor relationship.

Koops van 't Jagt et al found positive results on patient-doctor interactions from an intervention that used pictures and narrative with patients who have limited health literacy. The authors cautioned, however, against generalising the findings without further evaluation.[254] Similarly, Boyd et al found success in improving patient-doctor communication among a small group of primary care patients who were receiving 'Guided Care', an administrative management process managed by a specialist nurse who coordinated the delivery of care to people with multiple health problems.[255]

In North America, Betancourt et al reviewed literature on cultural competency interventions aimed at improving disparities in health outcomes between patients from different ethnic backgrounds, especially when they come into contact with doctors of different ethnic origins. The researchers highlight the risk that trust and satisfaction can be adversely affected by negative communication experiences where cultural differences are the primary issue. Administrative interventions, aimed at improving institutional, procedural and clinical competency, were found to be effective in addressing these risks.[256]

2.3.4 Summary of the review of literature on the patient-doctor relationship

In summary, although not a common focus of research, there are numerous studies supporting the general principle that administrative interventions, for example in education, inter-professional interactions and cultural competency, can benefit outcomes related to the doctor-patient relationship.

There is an important iterative thread emerging from this review of the literature on the patient-doctor relationship. The literature suggests the patient-doctor relationship has structural, procedural and social contexts in the health system. The structural context includes its characterisation as an *a priori* foundation for health services; the procedural

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[253] N Pratt et al, "Commitment Questions Targeting Patients Promotes Uptake of Under-Used Health Services: Findings From A National Quality Improvement Program In Australia", *Soc Sci Med* 145 (2015): 1-6.

[254] R Koops van 't Jagt et al, "Development of a Communication Intervention for Older Adults with Limited Health Literacy: Photo Stories to Support Doctor–Patient Communication", *J Health Comm* 21, no. Supp (2016): 69-82.

[255] C Boyd et al, "A Pilot Test of the Effect of Guided Care on the Quality of Primary Care Experiences for Multimorbid Older Adults", *Journal Gen Int Med* 23, no. 5 (2008): 536-542.

[256] J Betancourt et al, "Defining Cultural Competence: A Practical Framework for Addressing Racial/Ethnic Disparities in Health and Health Care", *Public Health Reports* 118, no. 4 (2003): 293-302.

context is evidenced by the relationship's function in shaping health outcomes; and the social context is informed by broader discourses in autonomy and justice.

There is evidence that a physician's performance in the relationship affects health outcomes. Both the Stokes Review in Western Australia and the BMA surveys in the UK suggest that a 4-hour target has a high impact on the patient-doctor relationship from the perspective of clinicians, primarily in the areas of a lack of time with patients, over- and under-investigation of clinical signs and symptoms, and concerns on behalf of the clinicians that they are placing patients at risk from premature discharge or incomplete medical work-up.[257] [258] Byyny concludes that these facets of the patient-doctor relationship — time, diagnosis and management, safety and care — are influential in physician satisfaction with their relationships with patients.[259]

There are indicators from research on burnout that doctors' personal views of the quality of their relationships with patients have consequences for clinical performance. Shanafelt et al found increased levels of burnout amongst doctors who reported a lack of time with patients and loss of control of their workplace.[260] Linzer et al report that physicians make more errors in patient care and perform less optimally if affected by burnout, which itself is correlated with stressful work environments.[261] Hence, a 'complex intervention' of an administrative kind, where evidence exists of its impact on physicians' perceptions of the quality of the patient-doctor relationship, has the potential to effect major change in the health system because (a) the physician's individual performance is impacted and this can affect clinical outcomes via the patient-doctor relationship, and (b) because of the structural, procedural and social contexts within which the relationship exists. Through this iterative pathway, there are grounds to hypothesise that one effect of time-based targets on health outcomes is mediated by the impact of the target on physician satisfaction and the consequences on their individual performance in the patient-doctor relationship.

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[257] Stokes, *Four Hour Rule Program Progress and Issues Review*, 14-15.

[258] British Medical Association, *Government's A&E Target Puts Patient Care At Risk*.

[259] R Byyny, "Time Matters in Caring For Patients Twenty Minutes isn't Enough:, *Pharos Alpha Omega Alpha Honor Med Soc* 79, no. 2 (2016): 2-8.

[260] Shanafelt et al, "Burnout and Satisfaction with Work-Life Balance", 1377-1385.

[261] M Linzer, et al, "Organizational Climate, Stress, and Error in Primary Care: The MEMO Study", in eds. K Henricksen, J Battles, E Marks et al, *Advances in Patient Safety: From Research to Implementation (Volume 1: Research Findings)* (Rockville: Agency for Healthcare Research and Quality, 2005).

A compelling rationale has thus been established for inquiry into the impact of the 4-Hour Rule on physician's perceptions of the patient-doctor relationship. Proper consideration of these effects first requires Theory-building to develop an ontological basis for where and how the rule impacts on health outcomes via physician performance in the patient-doctor relationship. This inquiry aims to make a novel contribution to this theory-building endeavour.

2.4 'Complex interventions' require evolving research methodologies

The unsatisfactory situation in which academic literature presents assumed or incomplete notions of the nature of the 'universe' of health services, or presumes a deterministic ontology in which cause and effect are definitively attributable, has been addressed in recent years with the publication of major reports from the WHO and IOM in the US. The WHO published a 'Flagship Report' on new approaches to health services research which acknowledges that:

- "[e]very intervention, from the simplest to the most complex, has an effect on the overall system, and the overall system has an effect on every intervention", and

- dynamic relations are the determinants of health-care and its performance, and emphasise the virtue of keeping people at the centre of health services design.[262]

On the basis of this understanding, the report encourages people and organisations to reframe health services as 'systems', with features common to other systems structures and that require different approaches to thinking about how they function (see Figure 2.7).[263]

Features of Systems	
Self-organising	Governed by feedback
Constantly changing	Non-linear
Tightly linked	History dependent
Counter-intuitive	Resistant to change

Figure 2.7: Features of Systems (*Adapted from de Savigny and Taghreed*[38])

[262] de Savigny and A Taghreed, *Systems Thinking for Health Systems Strengthening*, 19.

[263] ibid. 40.

The report promotes the centrality of people in the health system, not just as mediators and beneficiaries, but as actors driving the system, in alignment with Donabedian's view of the indispensable role of people and their ethics in creating quality systems.

The report sets out ten steps towards using 'systems thinking' to address 'complex interventions' (which includes administrative interventions) aimed at one or more health system 'building blocks' (see Figure 2.8), as opposed to an exclusive use of deterministic methodologies for evaluating interventions aimed at a specific health problem.

The authors observe that systems thinking approaches "go beyond [the] input-blackbox-output paradigm to one that considers inputs, outputs, initial, intermediate and eventual outcomes, *and* feedback, processes, flows, controls, and contexts".[264]

Evidence from the literature in relation to the NEAT (see Section 2.3.1.4), indicates that the 4-Hour Rule impacts individual, collegial, organisational, leadership, and financial dimensions of the health system, thus making them 'complex interventions' as characterised by the WHO. That is, the NEAT is an intervention with systems-wide effects on multiple building blocks of a health system requiring a deeper understanding of the linkages, relationships, interactions and behaviours among the elements within the entire system.[265]

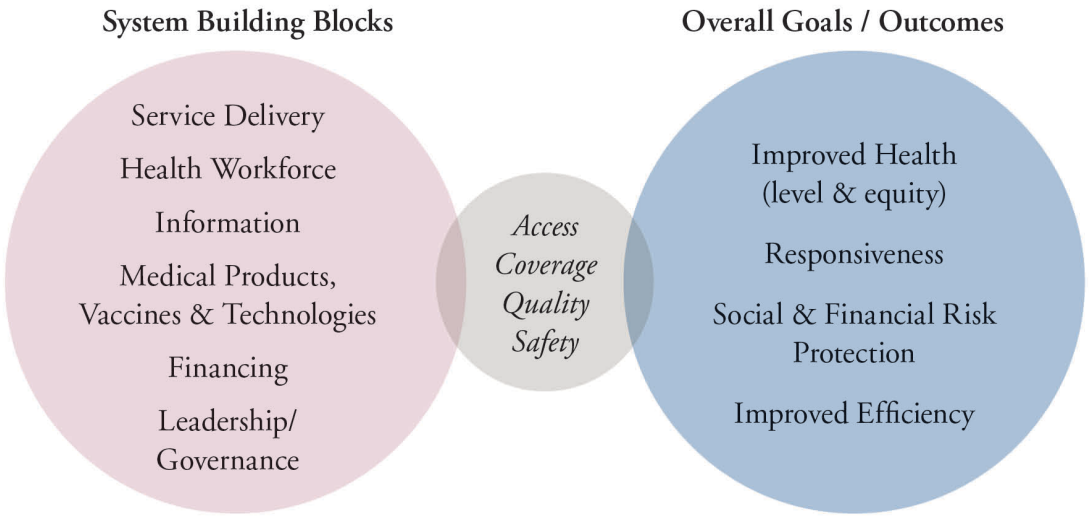

Figure 2.8: A System Framework for Health (*Adapted from de Savigny and Taghreed*[38])

[264] ibid. 34.

[265] ibid. 33.

The National Academy of Engineering and Institute of Medicine (IOM) in the US reflect the sentiments of the WHO in calling for systems thinking as an essential response to moving health-care away from a 'cottage industry' towards a properly integrated and effective system of health-care.[266]

Chuang and Inder argue that, despite strong interest and sound logic for the use of systems thinking approaches to understanding complex social interventions, there is a paucity of literature that engages with the task.[267] A systematic review by Carey et al on systems thinking applied to public health showed that very few researchers are using the approach to resolve answers to public health research questions and that there is scope for an expansion of systems methodologies to investigate complex issues related to public health research.[268]

An illustrative example of the limited literature using a systems thinking approach in health services research is provided from a literature search of the MEDLINE database using search terms 'health services research AND systems theory'. The search returned only 56 papers from a total of more than 40,000 on health services research.[269] A review of abstracts of these 56 papers establishes a clear desire of all the authors to see more systems thinking research being done to help solve increasingly complex problems arising within health-care and its organisations. Hence, despite efforts to change the paradigm within which health systems are conceived and evaluated, there remains a large gap in actualising health services research informed by systems thinking.

2.4.1 Changing the paradigm in health services research

The general class descriptor 'systems theory' (a formal mode of systems thinking)[270] has its roots in the pioneering work of Bertalanffy, documented in his treatise 'General System Theory', "a science and philosophy of synthesis", marked by its reaction against the mechanisation and logical positivism of the natural sciences which he saw as

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[266] P Reid, W Compton and J Grossman, eds., *Building a Better Delivery System: A New Engineering/Health Care Partnership* (Washington: National Academies Press, 2005).

[267] S Chuang and K Inder, "An Effectiveness Analysis of Healthcare Systems Using a Systems Theoretic Approach", *BMC Health Serv Res* 9 (2009), 195.

[268] G Carey et al, "Systems Science and Systems Thinking for Public Health: A Systematic Review of the Field", *BMJ Open* 5 (2015).

[269] See Appendix 4

[270] M Mulej et al, "Informal Systems Thinking or Systems Theory", *Cybernetics and Systems* 34, no. 2 (2003): 71-92.

dehumanising and "in the deepest sense", immoral.[271] A critical component of systems theory research is the modelling of interactions between elements of a system that, irrespective of the approach to making sense of these interactions, maintains an holistic view as the final grounding of an explanation for the nature of the system.[272] One might begin with general phenomena of interest and inquiring into their deeper structures, or one might instead begin with atomised and individual objects which form theorised hierarchies and are built upwards towards a systems explanation.[273]

Simple, Complicated and Complex Problems		
Following a Recipe	**Sending a Rocket to the Moon**	**Raising a Child**
The recipe is essential	Formulae are critical and necessary	*Formulae have a limited application*
Recipes are tested to assure easy replication	Sending one rocket increases assurance that the next will be OK	*Raising one child provides experience but no assurance of success with the next*
No particular expertise is required. But cooking expertise increases success rate	High levels of expertise in a variety of fields are necessary for success	*Expertise can contribute but is neither necessary nor sufficient to assure success*
Recipes produce standardized products	Rockets are similar in critical ways	*Every child is unique and must be understood as an individual*
The best recipes give good results every time	There is a high degree of certainty of outcome	*Uncertainty of outcome remains*
Optimistic approach to problem possible	Optimistic approach to problem possible	*Optimistic approach to problem possible*

Figure 2.9: Comparison of Simple, Complicated and Complex Systems (*Adapted from Glouberman and Zimmerman[274]*)

Boulding makes a distinction in systems thinking between three general classes of systems: simple, complicated and complex. Problems may be framed differently by an

[271] D Hammond,*The Science of Synthesis: Exploring the Social Implications of General Systems Theory* (Boulder: University Press of Colorado, 2010), 103-105.

[272] C Mele, J Pels and F Polese, "A Brief Review of Systems Theories and their Managerial Applications", *Service Science* 2, no. 1/2 (2010): 126-135.

[273] K Boulding, "General Systems Theory - The Skeleton of Science", *Management Science* 2, no. 3 (1956): 197-208.

observer of each class, as illustrated in an analogy in Glouberman and Zimmerman which compares recipes, moon-landings and childrearing (Figure 2.9).[274]

In this characterisation, systems that are simple or complicated are those recognised as remaining amenable to classical reductionist approaches to modelling of the interacting parts, as long as those interactions do not dominate the function of the parts.[275] However, in addition to the features of systems described in Figure 2.7, which might be shared across the three classes of systems, Morin, Kuhn, and Rickles, Hawe and Sheill argue that complex organisation of systems (like the living system of childrearing) exhibit three more important characteristics:

- Sensitivity to initial conditions: Where the evolution of a system over time is increasingly unpredictable and, for all practical purposes, cannot be repeated.

- Inherent uncertainty: The dynamism of organisation of relational elements in response and adaptation to stimuli makes outcomes uncertain under some conditions, as opposed to uncertainty resulting from difficult-to-calculate initial conditions.

- Emergence: Where behaviours arise from the *interaction* of the 'woven together' relational elements that cannot be reduced to an explanation *of* the individual elements.[276] [277] [278]

Clearly, based on these delineations, an Emergency Department can be understood as a complex system. Further, various researchers have utilised this characterisation in their work, including Carmorlinga and Carmorlinga, and Nugus et al.[279] [280] As a consequence of this description of the nature of the Emergency Department, and the WHO and IOM observations of the complexity of health-care generally, Smith and Feied encourage a research approach using a 'Tripartite Framework' involving:

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[274] S Glouberman and B Zimmerman, *Discussion Paper 8 Complicated and Complex Systems: What Would Successful Reform of Medicare Look Like?* (Saskatoon: Commission on the Future of Health Care in Canada, 2002).

[275] A Ahn et al, "The Clinical Applications of a Systems Approach", *PLoS Medicine* 3, no. 7 (2006): e209.

[276] E Morin, "Restricted Complexity, General Complexity", *Proceedings of the Colloquium "Intelligence de la complexit´e : ´epist ´emologie et pragmatique"*, trans. C Gershenson (2005), available from https://arxiv.org/pdf/cs/0610049.pdf .

[277] L Kuhn, *Adventures in Complexity: For Organisations Near the Edge of Chaos* (Devon: Triarchy Press Limited, 2009), 24-33.

[278] D Rickles, P Hawe and A Shiell, "A Simple Guide to Chaos and Complexity", *J Epidemiol Comm Health* 61, no. 11 (2007): 933-937.

[279] P Carmorlinga and S Carmorlinga, "Leading the Emergency Department as a Complex Adaptive System", in *The Value of Systems and Complexity Sciences for Healthcare,* ed. J Sturmberg (Switzerland: Springer, 2016), 205-216.

[280] P Nugus et al, 'Integrated Care In The Emergency Department: A Complex Adaptive Systems Perspective", *Soc Sci Med* 71 (2010): 1997-2004.

1. Description of the health-care organisation as a complex system, using the vocabulary and concepts of complexity theory.
2. Application of complexity theory to facilitate change in the organisation.
3. Use of the concepts and principles of complex systems to construct new organisational processes.[281]

In paying attention to the unique features of complexity, researchers need to approach the nature of problems in complex systems from a different paradigm. Mc Daniel et al, with reference to Kuhn's concept of paradigm, provide a useful summary of how thinking and meaning-making are different between 'classical' and 'complexity' paradigms,[282] as summarised in Figure 2.10. These differences imply important differences in how the universe and the phenomena within it are organised and structured, and how knowledge about them is understood to come into being.

Classical Paradigm	Complexity Paradigm
Equilibrium	*Nonequilibrium*
Deterministic description based on trajectories	*Probabilistic description based on ensembles*
Stability	*Order through fluctuations*
Reversibility	*Irreversibility*
Euclidean geometry	*Fractal geometry*
Local behaviour with short-range correlations	*Coherent behaviour with long-range correlations*
Average provides adequate description	*Fluctuations drive the average*
Omniscient managing agent	*Self-organisation*
Reductionist	*Holistic*
Inevitable approach to equilibrium characterised by increasing disorder	*Continuous diversification and evolution toward complexity*

Figure 2.10: Cognitive Reference Frames for Classical and Complexity Paradigms (*Adapted from McDaniel et al*[282])

A discourse capable of enunciating the consequences of a turn to complexity includes what Morin describes as a 'logical core' of complexity, framed by a dialogic comprising

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[281] M Smith and C Feied, *The Emergency Department as a Complex System* (National Centre for Emergency Medicine Informatics, 2002), available at http://ncemi.asatte.org/docs/miscellaneous/Misc/complexity%20necsi%20paper-02f.pdf .

[282] R Mc Daniel, D Driebe and H Lanham, "Health Care Organisations as Complex Systems: New Perspectives on Design and Management", *Advance Health Care Man* 15 (2013): 70.

"separability-inseparability, whole-parts, effect-cause, product-producer, life-death, homo sapiens-homo demens".[283] Morin expands on the dialogic of life-death to show that in complexity it is only through death, cell apoptosis, that life of organisms is sustained, made possible by the constructive circularity of the whole inside the part, just as the part is inside the whole. The logic does not assume a solution to the tension of antagonisms, but instead recognises the complementarity of the antagonisms by virtue of the circularity that joins them.[284]

Making sense of the recursivity and interdependence of the organisation of the universe in complexity is achieved with a common lexicon drawn judiciously over time from many disciplines, reflecting the development of complexity from a multi- and interdisciplinary base. Early work by Prigogine grounded language for complexity in physics, chemistry and thermodynamics, and chaos.[285] Waldrop notes that, later, complexity theory incorporated language from mathematicians, economists and computer scientists at the Sante Fe Institute, where people gathered to build novel ideas about interconnectedness, coevolution, and the nature of structure, order and disorder from the theory and language of these disciplines.[286]

Bloch carefully distils 11 key characteristics of complexity from a wide range of literature in complexity, and attends to the special language that complexity theory draws to its discourse in order to make meaning of the phenomena it is used to describe (see Figure 2.11).[287]

If an ontological shift is made towards embracing the complexity of systems such as clinical encounters and Emergency Departments, it entails a methodological correction in health services evaluation towards new ways of speaking about that complexity, so that *how* a system is inquired into better approximates the nature of the system being evaluated. In Morin's terms, one cannot imply complexity exists as the nature of phenomena and then proceed to a simplification in description of the phenomena:[288] it is a *sine qua non* that complexity of nature is described in terms of its essential complexity.

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[283] Morin, "Restricted Complexity, General Complexity", 16.

[284] E Morin, "From the Concept of System to the Paradigm of Complexity", *J Soc Evo Systems* 15, no. 4 (1992): 371-385.

[285] I Prigogine, "Exploring Complexity", *European J Op Research* 30 (1987): 97-103.

[286] M Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos* (New York: Simon and Schuster, 1993), 10-13.

[287] D Bloch, "Complexity, Chaos, and Nonlinear Dynamics: A New Perspective on Career Development Theory", *Career Dev Quarterly* 53, no. 3 (2005): 194-207.

[288] Morin, "Restricted Complexity, General Complexity", 6-7.

Making use of the Tripartite Framework of describing phenomena in terms of complexity, with its special vocabulary applying complexity theory in order to facilitate change and construct new understanding of organisational processes invites researchers to reflect on Leary's observation that:

When any aspect of our experience strikes us as worth understanding, either for the first time or in a new way, we begin to search for 'similar instances' … I would say that just as we turn to a dictionary for the definition of unknown words in terms of more familiar words, so we look to phenomena of other sorts, whether natural or artificial, for analogs of things, qualities and events — including aspects of our own experience and activity — that we wish to comprehend. And conversely, we often look to our own experience and activity for analogs of other natural and artificial phenomena.[289]

Complexity Term	Description
Autopiesis	*Self-organising ability of an entity to maintain itself*
Open	*Entities maintain themselves via continuous wenergetic interchange with the environment*
Network	*Any entity, by virtue of its open arrangement, is part of a network*
Fractal	*The organisation of the entity and its parts such that structure is self-similar at different scales*
Phase transitions	*Transformation of organisation within entities that vary between chaotic and organised, like water in its 3 phases as ice, liquid, steam*
Fitness peaks	*Spaces in phase transitions which yield the highest chance of survival of the entity*
Noise	*The necessary uncertainty of phase transitions between chaos and order arising from continuous interplay of internal and external network relations*
Sensitive dependence	*Small changes initially, can generate large changes as entities evolve over time*
Attractors	*Limit movement and growth of entities as they evolve over time. May divide under certain conditions as 'bifurcations' creating two new attractors*
Strange attractors	*The basis of fractals, they create conditions for emergence in which an entity evolves but in new forms*
Interdependence	*Entities exist only as part of nested and inseparable connectedness*

Figure 2.11: Examples of Vocabulary in Complexity (*Adapted from Bloch*[287])

[289] D Leary, *Metaphors in the History of Psychology* (Cambridge: Cambridge University Press, 1994), 2-3.

However, in a novel application of complexity theory to phenomena, a methodology aligned with complexity language and concepts is needed to reduce the risk of errors resulting from the incompatibility of descriptive and analytic methods with the underlying ontological theory: for example, Gaussian analytics applied to non-normal distribution of variables in complex systems, and misattribution of failures of complex interventions to obvious but inaccurate causes due to faulty causal assumptions.[290][291] Rigorous attention to a logical continuity between ontology, epistemology and methodology reduces the risk of sophistry or misleading conclusions, but it requires a high degree of transparency in explicating the details of these interlinked and conjunctive foundational concepts.

Lincoln and Guba used five axioms to compare and contrast positivist and naturalistic paradigm approaches to research inquiry, which they argue helped to explicitly define a coherence between research questions and the characterisation of ontology, epistemology and methodology critical for doing research on sociobehavioural phenomena (see Figure 2.12).[292] [293]

Five Axioms of Naturalistic Inquiry	
1	*The Nature of Reality*
2	*The inquirer-object relationship*
3	*The nature of truth statements*
4	*Attribution/explanation of action*
5	*The role of values in inquiry*

Figure 2.12: Five Axioms of Naturalistic Inquiry (*Adapted from Lincoln and Guba[293]*)

Though the authors have modified and adapted these axioms over time,[294] the axioms serve to orient thinking and planning towards the maintenance of coherence and quality, by carefully considering and defining the research position on each of the five axioms.[295]

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[290] M Jordon et al, "Implications of Complex Adaptive Systems Theory for Interpreting Research about Health Care Organizations", *J Eval Clin Prac* 16, no. 1 (2010): 228-231.

[291] Mc Daniel, Driebe, and Lanham, "Health Care Organizations as Complex Systems", 3-26.

[292] Y Lincoln and E Guba, *Naturalistic Inquiry* (USA: SAGE, 1985), 36-39.

[293] E Guba and Y Lincoln, "Epistemological and Methodological Bases of Naturalistic Inquiry", *ECTJ* 30, no. 4 (1982): 233-252.

[294] S Mathieson, ed., *Encyclopedia of Evaluation* (Thousand Oaks: SAGE, 2005), 274.

[295] Y Lincoln, "The Making of a Constructivist: A Remembrance of Transformations Past", Ch 4 in *The Paradigm Dialog,* ed. E Guba (Thousand Oaks: SAGE Publications, 1990), 67-87.

Kuhn responds to these five axioms from the complexity paradigm, concluding that:

1. The nature of reality is that it is dynamic, self-organising and emergent. Different perspectives on 'reality' may yield different descriptions.

2. The relationship between inquirer and object is characterised as self-organising and dynamic, continuous with the 'reality' in which they exist.

3. Truth is time, and context, related as a consequence of the nature of 'reality' and the inquirer-object relationship, unless extended to high levels of general organising principles.

4. Cause and effect are non-attributable concepts, replaced with descriptions and interpretations of patterns of organisation of the relations of entities.

5. Values are implicit and inherent in the inquiry process and offer a source of guidance towards a satisfying outcome.[296]

In complexity theory, systems thinking in health-care, as advocated by the WHO and IOM, is extended beyond *descriptions of* complexity to an embrace of the ontological and epistemological *consequences of* the complexity of health-care systems. It requires a turn to complexity theory that is more than allegorical or metaphorical.[297] It requires a change in paradigm in which every aspect of inquiry is infused and immersed in the language, characterisation and explanatory frame of complexity. This turn, unfamiliar to positivist researchers, has practical implications in health services research, discussed in *Chapter 3: Methodology*.

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[296] L Kuhn, "Why Utilize Complexity Principles in Social Inquiry?", *World Futures* 63, no. 3/4 (2007): 156-175.

[297] A Bousquet and S Curtis, "Beyond Models and Metaphors: Complexity Theory, Systems Thinking and International Relations", *Cambridge Review of International Affairs* 24, no. 1 (2011): 43-62.

CHAPTER 3: Methodology

3.1 Overview

This chapter presents the methodology employed to investigate the impact of administrative interventions, specifically the 4-Hour Rule, on physicians' perceptions of the patient-doctor relationship.

The emphasis of the research question on physicians' perceptions of the effects of the 4-Hour Rule in the context of Australian hospital Emergency Departments recommends a model of inquiry capable of capturing and synthesising multiple subjective experiences of shared phenomena. In addition, the methodology ought to prioritise theory-building, rather than hypothesis-testing, about the relations between the 4-Hour Rule and physicians' perceptions, the rationale and evidence for which are detailed in *Chapter 2: Literature Review*. With this arrangement and focus, the research methods are designed to produce data with which to describe (a) perceptions of relational dynamics, and (b) how the dynamics might be impacted by administrative interventions in a (c) more universal dimension of systems performance.

From the literature review presented in *Chapter 2*, the dominant ontological framing of health services research appears to be influenced by the medicalisation of the research agenda geared towards positivist reductive models of causation employing quantitative methods. Experimental research from the logical positivist paradigm relies on the ability of the researcher to objectively 'structure' the hypothesised relationships and quantify the strength of these relations. Hypothesising structural relationships in complex systems requires high-quality evidence in support of the hypotheses — a situation that is not supported by the very limited data relating to the impact of the 4-Hour Rule, or administrative interventions generally, on relational dynamics in health-care.

Rather than framing methodology as a choice between quantitative and qualitative research paradigms, Fawcett and Downs suggest the true dialectical is found in the relationship between theory and research, in which theory determines what data are to be collected and research findings challenge the theory.[298] Pursuing a quantitative model without proper regard to the theory of structures and relations increases the likelihood of committing an all-too-frequent misuse of methodologies by apply them to the wrong

[298] J Fawcett and F Downs, *The Relationship of Theory and Research* (Connecticut: Appleton Century Crofts, 1986), 1-10.

problem set.[299] Exploratory analysis of otherwise little researched phenomena using quantitative methods is possible, but still requires a situation in which strong evidence already exists for hypothetical causal associations.[300] Hence, in order to avoid disabusing quantitative or confirmatory methodologies based on unrigorous theoretical contexts, an exploratory, descriptive qualitative approach to the phenomena is used to generate data for theory-building about the structure and function of relations.[301]

The descriptive approach offers a way of better defining whether or not the theoretical relationship exists in the first instance, and can then, to some extent, provide indications as to what the important characteristics of the phenomena might be for future correlative or confirmatory research, should a relationship be found.[302]

Barrett-Lennard also argues that in the study of the dynamic workings of systems involving many relationships, which would include health-care and the patient-doctor relationship:

...[the] methodology in this case would be dynamic. It could not, at the present state of understanding in the human relations sphere, be fully laid out in advance, but would unfold further in the course of more than one application of the phenomenon under study... Since relational systems are emergent and 'open', a decision on the system's boundary (what is inside and what is outside the system) can hinge on investigator consultation and informed best judgement... Relationship research centres on the study of life processes occurring within and between dynamic systems. Controlled 'double blind' studies designed to test the effect of a specific circumscribed variable (a certain drug, say) and rule out the 'placebo effect' of anything else (such as a doctor or patient expectation) are seen as not applicable in the study of complex relationship systems. The principle of this methodology is also questionable. The fact that administration of 'placebos', even in drug research, is often accompanied by a degree of recovery or change implies that the human organism is working as a complex whole, not just the piece-by-piece impact of particular agents on targeted elements within this whole.[303]

Typically, medical science has favoured a positivist methodology with a set of research methods explicitly designed to moderate or eliminate any subjective 'observer effects' or placebo effects on the outcomes measured, on the basis that these can bias the output of results to favour a researcher's underlying assumptions.[304] Inherent within the selected

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[299] R Smith, "Medical Research — Still a Scandal", *BMJ Opinion,* (Jan 31, 2014), available at http://blogs.bmj.com/bmj/2014/01/31/richard-smith-medical-research-still-a-scandal/ .

[300] K Punch, *Introduction to Social Research: Quantitative and Qualitative Approaches* (Los Angeles: SAGE, 2013), 74-75.

[301] S Phelan, "A Note on the Correspondence Between Complexity and Systems Theory", *Systemic Prac and Action Res* 12, no. 3 (1999): 237-246.

[302] J Fawcett, *The Relationship Between Theory and Research* (Philadelphia: FA Davis Company, 1999), 116.

[303] G Barrett-Lennard, *The Relationship Paradigm: Human Being Beyond Individualism*, (London: Palsgrave Macmillan, 2013), 150.

[304] R Rosenthal and R Rosnow, *Artifacts in Behavioral Research: Robert Rosenthal and Ralph L. Rosnow's Classic Books* (New York: OUP, 2009), 300.

research methodology for this inquiry, both the researcher-as-observer and subject-as-observer are deliberately designed into the data-generating techniques, and methods are employed to explicitly analyse and synthesise the 'observer effects' in the results.

In reviewing methodology and in planning data acquisition and analysis, it is important to note that the lack of a strong evidence-base does not imply an *absence* of data from which to sketch out some plausible theoretical relations between administrative interventions and the patient-doctor relationship. The literature in *Chapter 2* identifies a potential pathway of influence of a 'complex intervention' of an administrative kind, via its impact on physicians' perceptions of certain qualities of the patient-doctor relationship (e.g. time, diagnostic clarity), which, in turn, can affect the doctors' perceptions of their clinical performance. This may effect change in the health system because (a) the physician's individual performance is impacted by their perception, which then impacts on clinical outcomes via the patient-doctor relationship, and (b) because of the relationship's structural, procedural and social contexts in the health system.

Given these considerations, this chapter encompasses a discussion of the basis for favouring the selection of a particular descriptive phenomenological approach, that of Empirical Phenomenology. The discussion also details a framework for the organisation of qualitative research outputs with more explicit reference to rendering validity and trustworthiness in a manner understandable to quantitative researchers, and thus hopefully fostering a wider appreciation of research outcomes among health-care professionals unfamiliar with qualitative research methodologies.[305] [306] [307] [308]

3.2 Justification for the research approach

3.2.1 Deciding the research question

Health services research often deals with evaluation of interventions on three interrelated, but distinct, aspects of health-care: service structure, service process and service

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[305] S Jayaratne and R Levy, *Empirical Clinical Practice* (New York: Columbia University Press, 2010), 11.

[306] L Leung, "Validity, Reliability, and Generalizability in Qualitative Research", *J Fam Med Primary Care* 4, no. 3 (2015): 324-327.

[307] G Bornhoft et al, "Checklist for the Qualitative Evaluation of Clinical Studies with Particular Focus On External Validity and Model Validity", *BMC Medical Res Methodology* 6 (2006): 56.

[308] D McKay, ed., *Handbook Of Research Methods in Abnormal and Clinical Psychology* (Thousand Oaks: SAGE, 2008), 23-34.

outcome.[309] [310] Choosing what to evaluate is an open question. The question ought to, given the resources consumed to conduct the inquiry, including the people recruited to participate, focus on questions with answers that are more likely to impact significant issues or problems.[311] An intervention of the magnitude and cost of the 4-Hour Rule across every public hospital in Australia, which has generated evidence from health-care professionals of it causing distress, bullying and unsafe clinical practices, is clearly an important area for further health services evaluation.

In *Chapter 2: Literature Review* it is established that not only is there limited research on the impact of the 4-Hour Rule on medical practitioners despite these adverse reports, but the existing health services research has also predominantly approached evaluation from a (quasi-)experimental design without due regard to adequate description of the ontological basis for the assumed associations or causal relationships through which the intervention is hypothesised to effect change at the interpersonal level. Therefore, a reorientation to a thorough description of the phenomena of clinical encounter as essential and basic structures of the Emergency Department, along with a descriptive approach to the naïve experience of those affected by the introduction of the 4-Hour Rule within the clinical encounter, is prudent.

3.2.2 The quantitative-qualitative paradigm dialectical and framing ontology

In parallel with the issues of medicalisation (discussed in *Chapter 2*, Section 2.2.2) and an assumed or uncertain ontology of health services research relating to the 4-Hour Rule, the issue of qualitative versus quantitative approaches to health research warrants a short discussion, given the controversies the tensions can create among researchers and practitioners in health-care.[312]

Qualitative approaches are still treated sceptically by many medical practitioners who view the results as unreliable and ungeneralisable in the same way as quantitative methods.[313] This is, in part, a misapprehension of the differences between the goals of the two

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[309] M Porta, ed., *A Dictionary of Epidemiology 6th Ed.* (New York: OUP, 2014), 131.

[310] Institute of Medicine, *Health Services Research: Opportunities for an Expanding Field of Inquiry — An Interim Statement* (Washington: The National Academies Press, 1994).

[311] P Blair and A Barton, "Asking the Right Questions", Ch 1 in *An Introduction to Health Services Research*, ed. D-M Walker (London: SAGE, 2014), 3-15.

[312] N Mays and C Pope, "Assessing Quality in Qualitative Research", *BMJ* 320, no. 7226 (2000): 50-52.

[313] K Malterud, "Qualitative Research: Standards, Challenges, and Guidelines", *The Lancet* 358, no. 9280 (2001): 483.

research paradigms.[314] Denzin and Lincoln contrast the goals of qualitative and quantitative work from the perspective of the researcher:

Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape the inquiry... They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasise the measurement and analysis of causal relationships between variables not processes.[315]

The medical practitioner is deeply engaged with forms of research generally selected and promoted by the body-politic of medicine with its "cultural commitment to mind/body, seen/unseen, natural/supernatural, magical/rational, rational/irrational, and real/unreal oppositions and assumptions".[316] This political persuasion has powerful and enduring foundations in the Enlightenment Project, beginning in the late 17th century across Europe, and continuing for 400 more years to the present day.[317] [318] Medicine has embraced the empirical positivist practices of the 'hard sciences'. It seeks to reduce knowledge about the body and disease to its *essential atomic form* and, by doing so, articulate ever more precisely the initial conditions of disease, illness and injury.[319] In the dominant paradigm, more precise understanding of initial conditions should improve predictions of causal trajectories. Scientists and doctors have seen awe-inspiring advancement in the ability to resolve illness and burden among citizens in the last 150 years through direct intervention into the originating physico-physiological basis of illness.[320]

Under these historical conditions, it is perhaps less surprising that health services research, especially that focused on hospitals, has experienced medicalisation of the sort detailed in Section 2.2.2. With this 'inheritance' in mind, constructing a methodology for inquiry from a quantitative frame using (quasi-)experimental designs is almost irresistible. Indeed, one such method, structural equation modelling (SEM), has been applied to 'complex interventions' in health-care settings with apparent success in describing the

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[314] A Labuschagne, "Qualitative Research — Airy Fairy or Fundamental?", *The Qualitative Report* 8, no. 1 (2003): 100-103.

[315] N Denzin and Y Lincoln, eds., *The SAGE Handbook of Qualitative Research 4th Ed.* (USA: SAGE Publications, 2011), 9.

[316] M Schemer-Hughes and M Lock, "The Mindful Body: A Prolegomenon to Future Work in Medical Anthropology", *Med Anthro Quarterly* 1, no. 1 (1987): 6-41.

[317] M Little, *Humane Medicine* (Cambridge: Cambridge University Press, 1995), 52-59.

[318] T Shogimen, "Medicine and the Body Politic in Marsilius of Padua's Defensor pacis", Ch 3 in *A Companion to Marsilius of Padua,* eds. G Moreno-Riaño and C Lederman (Netherlands: Brill, 2012), 71-115.

[319] C Davis, *Complementary Therapies in Rehabilitation: Evidence for Efficacy in Therapy, Prevention, and Wellness 3rd Ed.* (New Jersey: Slack Publications, 2009), 33.

[320] A Miles, "On a Medicine of the Whole Person: Away from Scientific Reductionism and Towards the Embrace of the Complex in Clinical Practice", *J Eval Clin Prac* 15 (2009): 941-949.

relationships between physiologic, clinical and health outcomes.[321] Other applications include using SEM to attribute causal associations between medical personality factors, job stress and career outcomes.[322]

SEM has been used with success in complex health-care environments involving both small and large numbers of variables.[323] Having collected a sufficiently powered data set, the researcher can conduct path analyses that represent the researcher's 'structuring' of hypothetical causal relationships among the measured variables.[324]

However, the ability of the researcher to 'structure' the hypothesised relationships is reliant upon what the previous literature indicates the associations between variables might be. In a thorough review of the strengths and vulnerabilities of SEM research in psychology, MacCallum and Austin detail the risks inherent in hypothesising structural relationships in complex systems in which *a priori* reasonably well validated structural models cannot be described, leading to an "abuse" of 'model generating methods' that result in misleading and inaccurate descriptions of causal and associative relationships.[325]

Given the assumptions regarding the ontological and theoretical foundations of how administrative interventions impact on complex health-care environments and the absence of data on how these specifically affect the patient-doctor relationship, hypothesis weighting does not appear sufficiently developed to support the level of rigour required for SEM.

Rather than hijacking a 'model generating' quantitative methodology for the purpose of theory development, a qualitative methodology provides a more appropriate approach to the research question, respecting the uncertainty of the structure of relations that exist within the Emergency Department.

Deterministic causation, dominant in medical discourse, is de-emphasised in favour of c*ritical realism.* According to Fleetwood, the critical realist stance accepts the contingency

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[321] R Hays, D Revicki and K Coyne, "Application of Structural Equation Modeling to Health Outcomes Research", *Eval Health Prof* 28, no. 3 (2005): 295-309.

[322] IC McManus, B Winder and D Gordon, "The Causal Links Between Stress and Burnout in a Longitudinal Study of UK Doctors", *The Lancet* 359 (2002): 2089-2090.

[323] T Beran and C Violato, "Structural Equation Modeling in Medical Research: A Primer", *BMC Res Notes* 3 (2010): 267.

[324] Hays, Revicki, Coyne, "Application of Structural Equation Modeling to Health Outcomes Research", 295-309.

[325] R MacCallum and J Austin, "Applications OF Structural Equation Modeling IN Psychological Research", *Ann Rev Psychol* 51 (2000): 201-226.

and (partial) indeterminacy of predicting or hypothesising outcomes in a complex system due to its sensitivity to initial conditions and the probabilistic emergent phenomena of interactions of entities over time.[326] The 'realness' of social enterprises comprising many entities, which would include health-care, is a realness in which, "social structure is a nexus of connections among [agents or actors] causally affecting their actions and in turn causally affected by them. Social structure is relational: it exists in virtue of agents entering into relations".[327] Fleetwood explains this perspective in an observation that the "patriarchal structure is the nexus of (a specific set of) relations between relatively powerful men and relatively powerless women". It is neither explicitly the individual men nor the women fulfilling the sets of relations that determine the patriarchal structure; the structure itself causes the relations.

From a critical realist perspective, the realness of the social structure has independence from, though is not completely divorced from, its discourse in social relations.[328] That is, there are relata within the nexus that are taken as real in an extra-discursive domain.[329] Using the critical realist perspective, the lens of inquiry can turn to both constructivist components of the social enterprise of medicine (such as the implications of the recombination of ideological and practical elements of local culture within its practice),[330] as well as to the structural relata of which the organisation of the system is composed.

The consequence of a critical realist ontology in qualitative research design is complementary to the traditional inductive, iterative procedures of many qualitative projects, and continues to frame the researcher, research design and method *as part of the actual structure* of the research, rather than as a separate template only *for* the research.[331]

3.2.3 Exploratory versus confirmatory methods

Allied to the qualitative-quantitative dialectical in health research is the question concerning the ends an inquiry is designed to achieve, with respect to the inferences and conclusions the researcher makes about their findings. This can be summarised as a

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[326] S Fleetwood, "The Ontology of Organisation and Management Studies", in *Realist Applications in Organisation and Management Studies,* eds. S Ackroyd and S Fleetwood (London: Routledge, 2004), 40-41.

[327] ibid. 45.

[328] ibid. 35.

[329] ibid. 36.

[330] B Pfleiderer and G Bibeau, eds., *Anthropologies of Medicine: A Colloquium on West European and North American Perspectives* (New York: Springer Science & Business Media, 2012), Part II.

[331] J Maxwell, *A Realist Approach for Qualitative Research* (Thousand Oaks: SAGE, 2012), 76.

question of design regarding whether the inquiry is responding in an exploratory or confirmatory manner to the research question.[332] Under conditions in which there is little guidance from previous research to inform theoretical models of the structure and relations of complex systems, confirmatory methods of study design are difficult to justify. Confirmatory design and analyses rely upon robust *a priori* descriptions of the relationships, and their estimated magnitude, between an intervention and its effects.[333] In other words, to use confirmatory methods to measure and evaluate the end purpose or outcome of an administrative intervention, without a convincing and theoretically robust arc of inference, is epistemologically questionable.[334] [335]

While it is possible to engage in exploratory analyses of little-researched phenomena using quantitative methods, there is an argument that defining and measuring variables in this situation requires very tightly defined logical connections from concepts (variables) to data that are available prior to the study commencement.[336] In the case of the study of the 4-Hour Rule and the effects on physicians' perceptions of patient-doctor relationship dynamics, these data are limited (see Section 2.3.3.3). Pursuing a quantitative model without proper regard to the theoretical and ontological basis of the research question may artificially compartmentalise phenomena such that findings are framed incompletely or are frankly incorrect approximations of the world they were intended to shed light upon.[337]

The current literature suggests that physicians in acute health settings provide mediating and moderating effects between a patient and the hospital health-care setting. These effects of context are influenced by 'internal factors' within physicans, such as personality, temperament, stress appraisal and coping ability, that respond dynamically to a physician's physiological, emotional and psychological state. Subsequent physician performance in the clinical encounter with patients mediates and manifests the effectiveness of medical care 'done to' the patient.

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[332] O Atieno, "An Analysis of the Strengths and Limitation of Qualitative and Quantitative Research Paradigms", *Problems of Education in the 21st Century* 13 (2009): 13-18.

[333] M Williams, M Curtis and K Mullane, *Research in the Biomedical Sciences: Transparent and Reproducible* (London: Academic Press, 2017), 74.

[334] R Nuzzo, "Scientific Method: Statistical Errors", *Nature* (Feb 12, 2014), available at http://www.nature.com/news/scientific-method-statistical-errors-1.14700 .

[335] P Bendassoli, "Theory Building in Qualitative Research: Reconsidering the Problem of Induction", *Forum Qual Soc Res* 14, no. 1 (2013): Art 25.

[336] K Punch, *Introduction to Social Research: Quantitative and Qualitative Approaches 3rd Ed.* (London: SAGE, 2013), 74-75.

[337] Smith, "Medical Research — Still A Scandal".

Not only then can a time-based target effect change on the material space-time context in which the encounter takes place, it may also exert influence via physician perceptions and the effect of this on performance. In addition, the Stokes Review in WA and the BMA surveys of NHS doctors all suggest that physicians developed negative perceptions of having enough time with patients, and being able to practise safely. The research by Freeborn and Williams implies that any sense of a loss of control over clinical decision-making can contribute to burnout and increased self-reported clinical errors and loss of clinical effectiveness.[338] [339]

Collecting and analysing data about the lifeworlds of physicians deeply engaged in clinical encounters in hospital Emergency Departments in which the 4-Hour Rule applies is inherently important in evaluating aspects of the performance of the health-care system in view of the implied importance of the physician's perceptions of their role; the patient-doctor relationship; attitudes to health and care; and response to administrative interventions. Given the lack of useful hypotheses for relating the complexity of relations between the systemic, organisational, interpersonal and personal, exploratory analysis is utilised to uncover and identify the connections, in a way that does not privilege causation.[340] [341] [342] [343]

3.2.4 Phenomenology: a descriptive methodology in a critical realist ontology

Phenomenology begins from a premise that what is present in conscious experience consists of both 'concrete particulars' and the 'categories of meaning' into which experience associates.[344] Phenomenology is concerned with distinguishing, by description, the 'particulars' and 'meanings' of the conscious experience which are essential to the presence of the experience in consciousness as 'the things themselves'.[345] Doing so involves the systematic study of human experience, free from influence of

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[338] E Williams et al, "The Relationship of Organizational Culture, Stress, Satisfaction, and Burnout with Physician-Reported Error and Suboptimal Patient Care: Results from the MEMO Study", *Health Care Manage Rev* 32, no. 2 (2007): 203-212.

[339] Freeborn, "Satisfaction, Commitment, and Psychological Well-Being among HMO Physicians", 13-18.

[340] W Vogt, D Gardner and L Haeffele, *When to use what Research Design* (New York: Guilford Press, 2012), 144.

[341] M Neergaard et al, "Qualitative Description – The Poor Cousin of Health Research?", B*MC Med Research Methodology* 9 (2009): 52.

[342] Groene et al, "Investigating Organizational Quality Improvement Systems", 281.

[343] WHO, *Systems Thinking for Health Systems Strengthening*, 34.

[344] S Hein and W Austin, "Empirical and Hermeneutic Approaches to Phenomenological Research in Psychology: A Comparison", *Psych Methods* 6, no. 1 (2001): 3-17.

[345] P Willis, "The "Things Themselves" in Phenomenology", *Indo-Pacific J Phenom* 1, no. 1 (2001).

prejudgment and assumption of what the 'truth' of the nature of the object or world might be.[346]

This question of the nature of truth is an important point of reflection in justifying a research approach. In their treatise on the 'cult of statistical significance', Ziliak and Nansen McCloskey challenge the prevailing orthodoxy of significance testing as a means of determining truth:

> ...[i]f the *p doesn't fit — the sizeless scientist says — following the dictates of R. A. Fisher — then you must acquit. William James believed that "we have the right to believe any hypothesis that is live enough to tempt our will", but added — in a philosophical pragmatism friendly to what Neyman and Savage called "inductive behaviour" — what really tempts is what a belief "leads to". What, a scientist should ask, are the social or personal human purposes activated by the belief? What does the belief lead to?*[347]

One of the prevailing assumptions underlying the introduction of the 4-Hour Rule (see Section 2.3.1) is that reducing wait-times to separation from the Emergency Department for all patients will result in a reduction in the injury, harm and death caused iatrogenically from latent risks and failures in the health-care system of the hospital. The outcomes of injury, harm and death, measured statistically and compared to a statistical mean, form the basis of judgement about the value of the 4-Hour Rule. There is little current literature to demonstrate engagement with the important question of what the 'belief' in this chain of causation 'leads to' among the behaviours of clinical staff. This is despite evidence that the results have included harm and injury to staff.

In the critical realist ontology of Bhaskar,

> *Human action is characterized by the striking phenomenon of intentionality. This seems to depend upon the feature that persons are material things with a degree of neurophysiological complexity which enables them not just, like other higher-order animals, to initiate changes in a purposeful way, to monitor and control their performances, but to monitor the monitoring of these performances and to be capable of a commentary upon them.*[348]

The pivotal characterisations in Bhaskar's observation are those of *intentionality* and a capacity for commentary upon *monitoring of the monitoring*, both formal and foundational

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[346] A Davidsen, "Phenomenological Approaches in Psychology and Health Sciences", *Qual Res Psychol* 10, no. 3 (2013): 318-339.

[347] S Ziliak and D Nansen Mc Closkey, *The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives* (Ann Arbor: University of Michigan Press, 2008), 11.

[348] R Bhaskar, *The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences 3rd Ed.* (London: Routledge, 1998), 35.

aspects of phenomenology, discussed below.[349] Budd, Hill and Shannon identify the "complementarities" of phenomenology and critical realism to define a method of inquiry applied to research on the nature of libraries:

For example, if the institution examined is the public library, there is a capitalist structure that is grounded in taxation; the structure contributes materially (ontologically) to the Being of the public library. All services, collections, access, and interactions between staff and community will be affected by that structure… there is necessary intersubjectivity, there is reflection on self and other, and there is ontological being manifest through action.[350]

The 'truth' of interest in this inquiry is the nature of the effect of the 4-Hour Rule on physicians' perceptions of its impact on the patient-doctor relationship. Discovery of 'truth' in the critical realist ontology involves the collection of knowledge about the circumstances of structure, process, interaction, intersubjectivity and reflection-on-action in the lifeworld of the Emergency Department. The phenomenological approach of deep encounter with the phenomena of interest is appealing as the mode of discovery for this endeavour.

Phenomenology is also intuitively appealing because of my professional background in psychiatry. Phenomenological methods, discussed in the next section, are complementary to the praxis of my working life, involving a naïve curiosity into the representations and behaviours communicated in each patient's dialogue about their lifeworld as they are encountered with, and within, me, counterbalanced with a critical and observing stance readying for the emergence, from within the shared lifeworlds, of patterns of relations and meaning-making that can be understood in the intersubjective space of broader social relations and histories.

3.3 Applied phenomenology in research

As discussed in *Chapter 2* Section 2.4, uncertainties often surround the 'initial conditions' of relations of the constitutive elements within complex phenomena such as a hospital Emergency Department. Limited insight into initial conditions can mean that there is also uncertainty about the trajectories one might anticipate from the actions and reactions of people and things interacting in the department. The 'natural state' of mind is to

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[349] D Woodruff Smith, " 'Pure' Logic, Ontology, And Phenomenology", *Revue internationale de philosophy* 224 (2003): 21-44.

[350] J Budd, H Hill and B Shannon, "Inquiring into the Real: A Realist Phenomenological Approach", *The Library Quarterly* 80, no. 3 (2010): 267-284.

accept on face value whatever is first encountered as *the* initial conditions and to propagate a set of trajectories in essentially deterministic terms from that point.[351]

However, it is known that in medicine not all diagnoses and management can be inferred deterministically, and sometimes require probabilistic approaches, such as those of Bayesian probability reasoning.[352] [353] A further consequence of the level of uncertainty of initial conditions in the clinical encounter is that one is unsure whether what is experienced as probabilistic outcomes of health-care choices is a reflection of an underlying ontological reality of probability, or is instead the epistemological consequence of the inability to define the important data of initial conditions.[354]

In undertaking a research inquiry with such uncertain fundamental problematising, it might make sense to strive to be agnostic about a research position in terms of both ontology and epistemology. This would require one to hold themselves in some cognitive and experiential state that allows for critical awareness of both that which is being observed *and* the assumptions within the observer making that awareness possible. It would suggest a need to also avoid assumptions of the 'reality' of the mundane level of the life experience being researched.

In this vein, van Manen posits that examined subjectivity of the "assumptions of our personal, cultural, political, and social beliefs, views and theories" is a pathway to greater understanding of human lives.[355] This implies the capacity, in Bhaskar's words, for the 'striking' human ability for commentary upon the 'monitoring of the monitoring', a level of ordering that sits comfortably within Husserlian phenomenological philosophy.[356] [357]

Husserl's phenomenology arose historically from his reaction against what he saw as Western science's positivist orientation to formalising lived experience, with a reductionist objective that carves off critical characteristics of experience that render it meaningful to

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[351] M Merleau-Ponty, *Phenomenology of Perception* (London: Routledge Classics, 2003), 476-503.

[352] P Szolovits and P Pauker, "Categorical and Probabilistic Reasoning in Medical Diagnosis", *Artificial Intelligence* 11 (1978): 115-144.

[353] J Doust, "Using Probabilistic Reasoning", *BMJ* 339, no. 3823 (2009).

[354] A Hàjek, "Interpretations of Probability", in *The Stanford Encyclopaedia of Philosophy Winter Ed.*, ed. E Zalta (2012), https://plato.stanford.edu/archives/win2012/entries/probability-interpret .

[355] M van Manen, *Phenomenology Of Practice: Meaning-Giving Methods in Phenomenological Research And Writing* (New York: Routledge, 2016), i-ii.

[356] D Smith, "Phenomenology", in *The Stanford Encyclopedia of Philosophy,* ed. E Zalta (2016), available at https://plato.stanford.edu/cgi-bin/encyclopedia/archinfo.cgi?entry=phenomenology .

[357] D Smith, *Husserl* (London: Routledge, 2013), 411.

humans.[358] This is a position not dissimilar to Bertalanffy's regarding the 'immoral' mechanisation of studies in the life sciences. Though recognising reductionism as a legitimate process for making meaning, Husserl asserts that the error was to mistake this truncated worldview as *the* lifeworld, as reality itself, divorced as it is from grounding in the actual human lived experience.[359]

Phenomenology took the universality of the human capacity to wonder and refined it from a generalising affinity to a disciplined act, in which "any ordinary experience tends to become quite extraordinary when [it is] lifted up from our daily existence [and held] with our phenomenological gaze".[360]

The goal of phenomenological inquiry is to describe the interrelation of 'truth' (a potentially fuzzy category), intuition and cognition, as it is evidenced by that disciplined act of wondering.[361] [362] Wonder needs to arouse *gnosis*, a ground-state in which emotion, thought and knowledge arise and are held.[363] This is not a process that occurs piece by piece, but is arrived at unpredictably and uncertainly, via encounter with the totality of experience with the object of wonder, the 'particular' and the 'meaning' of phenomena.

In a deterministic worldview of parts and wholes, Husserl, and the phenomenologists who followed, uncloak a richer dimension of phenomena "gesturing towards a very peculiar formulation of the theory of forms according to which what is constituted are not just objects but varieties of manifolds".[364] Husserl proposed that the combinations of these manifolds and their presentation and re-presentation, and at the same time their 'given singularity', can lead us to more complete understandings of the meaning of objects.[365]

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[358] E Kohàk, *Jan Patočka: Philosophy and Selected writings* (Chicago: Uni Chicago Press; 1989), 6-7.

[359] H Wiltsche, "What is Wrong with Husserl's Scientific Anti-Realism?", *Inquiry* 55, no. 2 (2012): 105-130.

[360] van Manen, *Phenomenology of Practice: Meaning-Giving Methods*, 25.

[361] C Beyer, "Edmund Husserl", in *The Stanford Encyclopedia of Philosophy,* ed. E Zalta (2016), available at https://plato.stanford.edu/cgi-bin/encyclopedia/archinfo.cgi?entry=husserl .

[362] D Smith, "Truth and Epoché: The Semantic Conception of Truth in Phenomenology", in *Beyond the Analytic-Continental Divide: Pluralist Philosophy in the Twenty-First Century,* J Bell, A Cutrofello and P Livingston, eds. (New York: Routledge, 2015), 111-112.

[363] E Eng, "Erwin Strauß", in *Phenomenology World Wide: Foundations - Expanding Dynamics — Life-Engagements, A Guide for Research and Study*, ed. A-T Tymianiecka (The Netherlands: Springer Science & Business Media, 2002), 665-667.

[364] B Hopkins and J Drummond, *The New Yearbook for Phenomenology and Phenomenological Philosophy, Volume 12* (New York: Routledge, 2015), 181.

[365] Beyer, *Edmund Husserl,* available at https://plato.stanford.edu/cgi-bin/encyclopedia/archinfo.cgi?entry=husserl .

As an example, just as I may read a text and find it confused in parts, thus limiting my comprehension, a friend may read the very same text and find a deep coherence and understanding because of how the object is given to their unique experience. In this way a single object, the text, combines with two manifold identities in which it is more and less comprehended, creating one shared greater understanding of what is intelligible and what is less so. In a similar way, the goal of the phenomenological analysis is "laying out the manifolds that are proper to a particular kind of object" and to "spell out the blends of presences and absences, of filled and empty intentions, that belong to the object in question".[366]

This act of contrast between the presence and absence of an object informs part of the nature of phenomenological evidence.[367] [368] When an object is absent, rather than emptiness, phenomenology presupposes a different type of 'presence', the *intention towards the object's presence*. These intentions are of equal interest in the phenomenological sphere to what is present, and are a source of evidence.[369]

However, sometimes what is perceived as real is separated from the primordial act or thing itself, so understanding arising for this aspect of reality creates a possibility for erroneous apprehension of the true nature of an object. This error is not necessarily constitutively egregious. As Thao observes, "[p]henomenological description is proposed precisely in order to rectify significations intended by consciousness, by explicating their *authentic content"*.[370] 'Mis-apprehension' itself becomes a valuable phenomenological source from which to draw evidence about the true nature of phenomena.

To obtain authentic content the observer maintains a state of *epoché.* What actually constitutes the nature of epoché was at times unclear even in Husserl's work, but relates to an explicit disclosure by the observer that they experience the world as a *world of beliefs* that are constitutively and not automatically anything more than beliefs.[371] By bracketing the fundamental beliefs that constitute one's worldview — that is to say, acknowledging

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[366] R Sokolowski, *Introduction to Phenomenology* (New York: Cambridge University Press, 2007), 35.

[367] A-T Tymieniecka, ed., *Logos of Phenomenology and Phenomenology of the Logos. Book One: Phenomenology as the Critique of Reason in Contemporary Criticism and Interpretation* (The Netherlands: Springer Science & Business Media, 2006), 277.

[368] P Bossert, ed., *Phenomenological Perspectives: Historical and Systematic Essays in Honor of Herbert Spiegelberg* (The Netherlands: Springer Science & Business Media, 2012), 194-195.

[369] ibid. 195-196.

[370] T Thao, D Herman and D Morano, *Phenomenology and Dialectical Materialism* (The Netherlands: Springer Science, 2012), 90.

[371] D Moran, and L Embree, eds., *Phenomenology: Critical Concepts in Philosophy, Volume 1* (New York: Routledge, 2004), 257.

these beliefs as only beliefs and not constituents of the truth of the reality of things being encountered — the *a priori* "forms and evidential criteria for our judgements about objects", which would hold for any consciousness, are revealed.[372]

Husserlian structures and forms of evidence represented a radical departure from the ontological and epistemological characterisations of the natural world of the hard sciences at the beginning of the 20th century. He remained very much an ontological realist, acknowledging there are objectivities of the world, but at the same time insisting that truth about the world was only possible by subjecting this 'natural world' to phenomenological inquiry.[373]

Husserlian characterisation of the phenomenological world as 'manifolds of forms in combination' is complementary with the theoretical paradigm set out in *Chapter 2*, in which the idea of manifolds as structural and representative elements of the relational dynamics of the lifeworld of an Emergency Department and the clinical encounter is posited. Combined with a critical realist ontology, the phenomenological approach to inquiry, analysis and discussion of the clinical encounter and the experiences of the physicians within it is constituted by a naturalistic objective reality, the complexity and meaning of which lie not in the number or variety of moving or interacting parts, but instead as varieties of relational manifolds, the descriptions and functions of which are found in the intentionality of the agents and agencies engaged across the phase-space of the emergency room.

3.3.1 The bifurcation of phenomenology — description or interpretation

A primary decision required by a researcher who embarks upon a phenomenological inquiry is whether or not they privilege the *unreflected* givenness of phenomena and its *description in the intersubjective* space (if even possible), or they consider the *interpretation in the subjective* of the givenness and its description of a phenomenon as the priority (or as the unavoidable) access point to authentic manifestation of the object of inquiry.[374] This dichotomy is, crudely, the basis of the bifurcation of phenomenology between what are

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[372] T Seebohm, D Føllesdal and J Mohanty, eds., *Phenomenology and the Formal Sciences* (Dordrecht: Springer Science, 2012), 128.

[373] J Drummond, *Husserlian Intentionality and Non-Foundational Realism: Noema and Object* (Dordrecht: Springer Science & Business Media, 2012), 257.

[374] C Willig and W Stainton-Rogers, eds., *The SAGE Handbook of Qualitative Research in Psychology* (London: SAGE, 2007), 167.

eponymously described as the traditions of Husserl and Heidegger, respectively.[375] [376] Crowell argues that both were transcendental (that is, inter-subjectivist) phenomenologists but differed in the paths each privileged "to penetrate into this new dimension and to arrive at the right concepts, the right ways of asking questions, and the right methods".[377] At core, their differences related in part to "Husserl [holding] that the transcendental dimension could be understood as a continuation of the philosophy of subjectivity, while Heidegger thought it could be understood as a continuation of the philosophy of being".[378]

In deciding on which arm of the bifurcation of phenomenology one will follow, there are no strong arguments for or against either being used for an inquiry of this nature, or indeed, in van Manen's opinion, borrowing judiciously from both.[379] What is essential is that the path, once chosen, is followed through with clarity so that the model of evidence-building and verification of the research findings has some epistemological continuity between what is given in the data of the research and what is given in the manifesting of the meaning of that data through the researcher to the reader.[380]

I sought a fit for (a) the philosophical perspective of uncertainty of the 'true' nature of the elements constituting the clinical encounter and their relational dynamics, as well as the (b) potential to locate the phenomenological work within the scientific discipline of medicine, while (c) being mindful of my strong training background in psychological theories. In my professional life, the act of analytic interpretation is preceded by an encounter with the lifeworld of the patient that requires my presence to their experience, bracketed from my personal and professional worldview of judgements and heuristics, in an attempt to meet the truth of the patient's experience where they intend it. This discipline rests most comfortably in the Husserlian tradition of epoché and the descriptive methodologies of phenomenology.

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375 D Peduti, "Heidegger's Later Phenomenology: Allowing the Subtle Appearance to Emerge through the Din", Ch 8 in *Phenomenology 2010: Selected Essays from North America, Volume 5,* eds. M Barber and T Nenon (Paris: Zeta Books, 2010), 181-188.

376 S Crowell, "Does the Husserl/Heidegger Feud Rest on a Mistake? An Essay on Psychological and Transcendental Phenomenology", *Husserl Studies* 18 (2002): 123-140.

377 ibid. 126.

378 ibid. 126.

379 van Manen, *Phenomenology of Practice: Meaning-giving Methods,* 12-13.

380 R Valle, ed., *Phenomenological Inquiry in Psychology: Existential and Transpersonal Dimensions* (New York: Springer Science & Business Media, 2013), 82.

3.4 Empirical Phenomenology

Empirical Phenomenology emerges from the work of a group of phenomenologists in North America — including van Kaam, Giorgi, and Colaizzi — in what is sometimes referred to as the 'Duquesne School' of phenomenological psychology.[381] Techniques of interpretation (hermeneutic) and description (transcendental) inquiry are used within psychology, with the transcendental tradition predominant in the Duquesne School. The two approaches are succinctly differentiated as the former being primarily concerned with "a process of contextualisation and amplification" as opposed to the work of the transcendental to reveal "structural essentialization".[382] Hein and Austin contrast and compare the two dominant philosophical threads of transcendental and hermeneutic approaches and highlight the continued controversy over the nature of "bracketing" (also called 'reduction'), concluding with the observation of Merleau-Ponty of its "final impossibility".[383]

Giorgi, one of the leading proponents in the Duquesne School, explicitly states that his descriptive phenomenology of psychology is grounded in the transcendental perspective of Husserl, and argues against its characterisation as interpretive on the grounds that the descriptions the methods uncover are illuminated in the transcendental, intersubjective space.[384] My inquiry is guided, in the main, by Giorgi's descriptive empirical approach. Giorgi characterises the descriptive empirical phenomenological research approach in psychology in five stages:

1. The *epoché:* entering a state of receptive passivity from within which to encounter the lifeworld descriptions of participants

2. Encountering the *naïve descriptions* of the phenomena as given in the experience of each participant with the phenomena

3. B*racketing:* ascertaining units of meaning from within the descriptions, without context or contingency upon foreknowledge, judgment or conscious elaboration

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[381] S Hein and W Austin, "Empirical and Hermeneutic Approaches to Phenomenological Research in Psychology*:* A Comparison", *Psychological Methods* 6, no. 1 (2001): 3-17.

[382] ibid. 9.

[383] ibid. 6.

[384] A Giorgi and B Giorgi, 'Phenomenological Psychology", Ch 10 in *The SAGE Handbook of Qualitative Research in Psychology,* eds. C Willig and W Stainton-Rogers (London: SAGE, 2007), 165-178.

4. I*maginative variations:* inductive transformation of individual units of meaning into potential essential elements of the phenomena, by repeatedly testing different aspects of each element's appearance to consciousness for its essentiality

5. *The vocative:* a process of synthesis of the emergent profiles into a coherent representation of the meaning of the 'whole' phenomenon, usually in textual form.[385]

Aspers, another proponent of empirical phenomenological methodology, uses an elaborated approach to the empirical phenomenological based on Giorgi's foundations with explicit reference to the work of the sociologist Schütz, whose own phenomenology of psychology emphasised 'meaning structures' that emanate from an individual level, and a social level. In my inquiry, Aspers' empirical phenomenology informs the manner by which the 'imaginative variations' (stage four of Giorgi's approach) are engaged. According to Aspers' interpretation of Schütz, meaning structures are not discrete, because meaning is not "transmitted atom by atom: meaning is holistic, more like a web".[386] The consequence of this in Aspers' view is that it requires consideration of two phases for description of the research participants' experience of the phenomena. *First Order Constructs* describe the inductive primary layer of meaning that arises only from that which is given in the data provided by the participants to the research, in order to create what Giorgi would term the 'units of meaning'. These Constructs are conceived in the state of epoché as the naïve expressions of the natural world experience of the participants.

In the second phase of meaning-making, *Second Order Constructs* are created from epoché in the 'imaginative variations' on the First Order Constructs — much like a musician working on variations to a thematic melody — with explicit reference and interrelationship with the theoretical and scientific context of the research effort. These variations are enhanced and focused in Aspers' approach by using existing theory as a scheme of reference that is a good fit for the empirical data collected and described in First Order Constructs and that offers a possibility of answering the research question to which the data relate with a convincing phenomenological explanation.[387] For Aspers, the Second Order Constructs then give expression to the theory. Second Order Constructs

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[385] H Dreyfus and M Wrathful, eds., *A Companion to Phenomenology and Existentialism* (Chichester: John Wiley & Sons, 2011), 405.

[386] P Aspers, "Empirical Phenomenology: A Qualitative Research Approach (The Cologne Seminars)", *IPJP* 9, no. 2 (2009): 5.

[387] ibid. 6.

must communicate in two directions: (1) they must be congruent with the experience of the participant on whose First Order Constructs they are based; and (2) they must articulate and resonate with existing scientific literature (which incorporates Schütz's social meanings) that contextualises the research endeavour.[388] Aspers' process allows for the empirical data to "kick back" against a chosen theoretical reference and for the theory to be reformulated and refined as a consequence of the empirical work.[389]

Aspers describes seven steps to his 'empirical phenomenology', shown in Figure 3.1. These steps are correlated with Giorgi's approach to demonstrate the similarities and additional processes for assimilation of meaning with exisiting empirical research data captured in Aspers' method.[390]

Aspers' Empirical Phenomenology		Giorgi's Empirical Phenomenology Correlate
1	Define the research question	Define the research question
2	Conduct a preliminary study	N/A
3	Choose a theory as a scheme of reference	Description of phenomena build iteratively from the naïve descriptions of phenomena from participants
4	Study First Order Constructs	Imaginative variations in epoché, with 'bracketing' of personal and professional assumptions, beliefs, theories of one's worldview
5	Construct Second Order Constructs from imaginative variations on First Order Constructs with intention towards the foreknowledge of the scientific discipline	N/A
6	Check for unintended consequences via imaginative variations on First Order Constructs with intention towards found, but unintended meanings	Explore potential eidetic elements of phenomena of interest
7	Relate the evidence to the scientific literature	The vocative is shaped and directed towards expression within the scientific discipline in which research takes place

Figure 3.1: Seven Steps of Empirical Phenomenology (*Adapted from Aspers*[386])

[388] ibid. 6.

[389] ibid. 6.

[390] ibid. 5.

Though provided as 'seven steps', Aspers acknowledges this as a pedagogical need rather than an implied sequentialism. Instead, Aspers insists that a researcher will 'zig-zag' in an iterative flow, especially between Steps 1, 2 and 3 in early phases of inquiry.

For clarity, the process and procedural ordering in this inquiry, allowing for the 'zig-zag' inherent in the method, is summarised across the principal design approaches of the two authors in the following (A = Aspers; G = Giorgi):

- Define the research question (1A; G)
- Conduct a preliminary study (2A)
- Form tentative ideas about theory as a scheme of reference (3A)
- Resolve First Order Constructs (4A; 2G)
- Create Second Order Constructs as imaginative variations on First Order Constructs that relate to appropriate disciplines and that continue to give expression to, and refine, the theory serving as a scheme of reference (5A; 3G; 5G)
- Discussion: Further develop theory as a scheme of reference, through critical engagement with pertinent literature and testing for unintended consequences. Relate evidence to scientific literature (6A)
- Further resolve expression of the theoretical explanatory scheme of reference, using it to more fully explain relational dynamics. (7A; 5G)

Aspers' Step 2, shown in Figure 3.1, is a familiarisation process in which the researcher might spend time out in the field or meet and chat to representatives of the field of interest, in order to properly understand key knowledge and direction for establishing a rigorous research protocol and refinement of the research question (Step 1). The preliminary study and theory selection (Step 2 and Step 3) are not intended to over-ride inductive processes that begin in the analysis of participant transcripts to create First Order Constructs (Step 4), but are rather addressed to the naïve researcher who may have a limited prior understanding of the field of inquiry.[391]

The procedures used in the study of First Order Constructs are Husserlian, as described by Giorgi, above, in an attempt to get to the meaning structure of participants' experience of the phenomena of interest. The descriptive outputs are then subject to secondary analysis, extending the phenomenological project beyond description to 'bring it back'

[391] ibid. 6.

from the transcendental to the body of empirical understanding: the Second Order Constructs.

Communicating the inquiry methods and findings is not a mundane act. The form and language used by the researcher ought to evoke an affinity in the reader with the imaginative variations on the phenomenological object. This is termed the *vocative*. In this inquiry the aim is to render a textual representation that remains faithful to the phenomenological project, while at the same time doing so in a way that can 'speak' to health-care professionals who are strongly enculturated in positivist empiricism. Within the vocative, Empirical Phenomenology relates the primary evidence of the intersubjective experience of phenomena to an existing body of literature from the empirical field of related study, in order to benefit the process of evocation and understanding of the findings for the positivist reader.

3.5 Methods

3.5.1 Empirical Phenomenology method

Aspers anticipates that the researcher will have adequately familiarised themselves with the phenomena to be investigated by undertaking a preliminary study. However, in this instance I had been working for some years in hospital Emergency Departments in which the 4-Hour Rule had been introduced for the first time, and this was more than adequate as a naturalistic encounter with the 4-Hour Rule from which to determine a useful approach to defining the research question and developing an interview schedule.

In empirical phenomenological practice, data are often collected through interviews with participants who have adequate exposure to the phenomena of interest. For my purpose, any doctor working in an Australian public hospital before and after 2011 was likely to have had a significant exposure to the introduction of the 4-Hour Rule, making them suitable candidates for interviews.

The interview schedule was created iteratively in consultation with the doctoral supervisory panel. The goal of the schedule was to begin with the more general considerations of the patient-doctor encounter, moving to more specific themes about professionalism, productivity and effectiveness in the context of working with a patient. Finally, specific questions regarding the NEAT were formulated that aimed to draw participants back to their earlier general reflections on their perceptions of the patient-

doctor relationship with specific reference to how the relationship may have been affected as a result of the introduction of NEAT.

The initial theory acting as a scheme of reference (see Figure 3.1, Step 3) for interview data creation was the CanMEDS Framework for Medical Expertise.[392] This framework posits that knowledge, skills and attributes shape professional performance and that these elements can be learned and fostered over the course of professional life. It was anticipated that participants might describe their knowledge, skills and attributes in the context of their experience with the clinical encounter and the changes in these domains after the introduction of the 4-Hour Rule. This process was expected to help organise data for the creation of First Order Constructs.

The framework was used as an organising principle for conducting the interviews; however, as a function of the bracketing in the epoché, within which naïve descriptions in the interview data were parsed for the units of meaning, the framework was abandoned from further deliberations. First Order Constructs were resolved from the units of meaning across all the interview data without preconception to their content or number.

Once resolved, First Order Constructs were studied and examined over a period of time, and an assessment of their capacity to act as centrums for the 'webs' of meaning conveyed within each interview and across all interviews was undertaken. In Aspers' characterisation, First Order Constructs are not atomised meaning units distinct from the context of the whole of the interview data, but are like holons in which the sum of their parts and the whole of the Construct are harmonious and iterative. Each First Order Construct is presented with its collection of meaning units from the interviews.

Second Order Constructs were developed over time through imaginative variations of the First Order Constructs was undertaken. Aspers contends that the Second Order Constructs ought to articulate and resonate with the direct experience of interview participants (that is, with the First Order Constructs that exist as a function of the participants' naïve descriptions of phenomena) as well as having context within the existing scientific literature and social meanings of the phenomena at the empirical level.

Initially intuited lines of inquiry and associations between Second Order Constructs and other scientific and related literature were inducted and explored and annotated for future

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[392] J Frank, L Snell and J Sherbino, eds., *CanMEDS 2015 Physician Competency Framework* (Ottawa: Royal College of Physicians and Surgeons of Canada, 2015).

deliberation. Tangential and/or elaborating threads of thought were contemplated and investigated until a state of mind consolidated around a set of logic and/or arguments for the potential of the Second Order Construct to achieve its objective: that of expressing both a potentially eidetic element of the participants' lifeworlds *and* coherence with other empirical data. As Broad describes:

[t]hus, in any actual induction, the evidence is never merely the number of examined instances, but also the predominant agreement of all these instances with each other and the presupposition that the doubtful and unexamined cases must predominantly agree with the examined ones in order to count as relevant instances for or against the suggested law.[393]

This procedure was continued for some time beyond exhaustion of the primary interview data and First Order Constructs to ensure that any unintended consequences of the inquiry were given time and space to emerge. Aspers proposes that unintended consequences are an important observation in sociological fields of inquiry.[394] In other words, important phenomena or elements of phenomena are not always apparent to the actors observing or engaging with an explicit object of inquiry. For example, markets in which trading is done are the end product of more explicit goals such as having needs met. An actor having their needs met can engage with the market even if they have no concept of 'market' — market is the unintended consequence of having needs met.[395]

The vocative — that is, the expression in words of the findings of the inquiry — was pieced together over time from the fragments of writing for each First and Second Order Construct. This was aimed at ensuring that not too much overarching narrative influenced the description and production of Constructs. For clarity of representation and continuity of logic, some editing of the final organisation and description of Constructs was allowed; however, no substantive changes were made to any of the Constructs as stand-alone outputs of the empirical phenomenological methodology.

The synthetic process of organising substantive ideas, new insights, and limitations and future directions, all in the context of relating the empirical evidence from the inquiry to existing scientific literature (Figure 3.1, Step 7), was undertaken at some considerable time after the finalisation of First and Second Order Constructs to reduce the potential for synthetic processes to interfere with the descriptive phenomenological tasks and imaginative variations.

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393 C Broad, *Induction, Probability, and Causation* (The Netherlands: Springer Science & Business Media, 2013), 24-25.

394 Aspers, "Empirical Phenomenology", 7.

395 P Aspers, *Markets* (Cambridge: Polity Press, 2013), 150-159.

3.5.2 Framework for validation and trustworthiness

How clinicians relate to literature tends to be influenced by their judgment of the reliability and validity of the research outcomes and their level of competence in understanding the theoretical foundations of the research being reported.[396] With greater relatability, rigorous qualitative research outcomes are more likely to influence the decisions clinicians make about the value of the research in their own practices.[397]

Morse has argued that qualitative researchers in the health sciences should, in addition to lobbying more effectively on the strengths of qualitative research methods and outcomes, perhaps do more to increase the accessibility of their work in the body of health sciences literature. According to Morse, this can be achieved by applying a framework for the synthesis and organisation of one's work for consumption by health-care practitioners more traditionally trained in reading, and translating into practice, quantitative literature.[398]

Considering the specific task of making qualitative research more relatable to clinical audiences, Morse defines a framework for the organisation of information from qualitative research according to the following principles:

- the use of qualitative *insight* creates a new perspective
- qualitative *inference* contributes new theories
- the development of qualitative *evidence* contributes new knowledge, and
- appropriate use of *verification* supports new practices.[399]

Examining each of the four principles in the context of phenomenological inquiry helps to explicate methods to address the goals of validation and trustworthiness of data collection, analysis and synthesis, and presentation, for the general readership of health-care workers, to be covered below. However, before doing so, it is important to set out a framework for assessing the inquiry in the context of the general enterprise of qualitative research.

While improving the relatability of the inquiry for a health-care audience might be desirable, it is also important to assess the qualitative research in the inquiry in its own

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[396] R Jones, "Strength of Evidence in Qualitative Research", *J Clin Epidem* 60 (2007): 321-323.

[397] N Elder and W Miller, "Reading and Evaluating Qualitative Research Studies", *J Fam Prac* 41, no. 3 (1995): 279-285.

[398] J Morse, "The Politics of Evidence", *Qual Health Res* 16, no. 3 (2006): 395-404.

[399] J Morse, "Insight, Inference, Evidence, and Verification: Creating a Legitimate Discipline [Keynote Address]", I*nt J Qual Methods* 5, no. 1 (2006): 6.

right. There are several tools designed to provide guidance on the rigour of qualitative work according to specific relevant qualitative criteria. This includes Higgs' dimensions of trustworthiness, authenticity, credibility and congruence, and Smith's dimensions of concreteness, evocativeness, tonalism and intensification.[400] For the purposes of assessing the qualitative rigour of this inquiry, the model of Elliott, Fischer and Rennie is used, on the basis that it is an empirical attempt to synthesise a range of specific criteria-based assessment tools into one framework (Figure 3.2).[401]

Publishability Guidelines Especially Pertinent to Qualitative Research	
1	*Owning one's perspective*
2	*Situating the sample*
3	*Grounding in examples*
4	*Providing credibility checks*
5	*Coherence*
6	*Accomplishing general vs. specific research tasks*
7	*Resonating with readers*

Figure 3.2: Guidelines for Assessing Qualitative Research (*Adapted from Elliott, Fischer & Rennie*[401])

In addition to the criteria described by Elliott, Fischer and Rennie, the concept of saturation is frequently cited as an important factor in assessing the reliability of qualitative research.[402] Elliot, Fischer and Rennie note saturation as part of the components related to general versus specific research tasks in item six of their framework (see Figure 3.2). Though saturation may connote a concept related to volume, Fusch and Ness advise that saturation is neither a function of the number of interviews nor the 'exhaustion' of data obtained, but relates to the *depth* of data.[403] According to Fusch and Ness, depth is a function of both the level of the participant' experience with the phenomena of interest, and the quality and dynamic of the interview or observation setting.

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[400] Higgs, *Writing Qualitative Research,* 137-150.

[401] R Elliott, C Fischer and D Rennie, "Evolving Guidelines For Publication Of Qualitative Research Studies In Psychology And Related Fields", *British J Clin Psych* 38 (1999): 215-229.

[402] M Mason, "Sample Size And Saturation In Phd Studies Using Qualitative Interviews", *Forum: Qual Soc Res* 11, no. 3 (2010): Art 8.

[403] D Fusch and L Ness, "Are We There Yet? Data Saturation in Qualitative Research", *The Qual Report* 20, no. 9 (2015): 1408-1416.

3.5.2.1 Qualitative insight to create a new perspective

Qualitative insight in the phenomenological project arises from deep responses to the lifeworlds and naïve descriptions of participants. Using the attitude of the epoché, the naïve descriptions are encountered iteratively to establish the 'units of meaning' for later analysis. Inductive analysis of data, looking for the synthetic units of meaning, provides an additional perspective that speaks in two directions: towards the original meaning of participants, and towards the location of meaning within the scientific enterprise.

Insights may arrive as fragments of ideas, whole ideas or amalgams of meaning units. Insight is deepened and taken beyond the mundane ego experience of the individual participants through a process of imaginative variations. This process tests for the generalisability of individual and collective units of meaning, so-called First Order Constructs. The hope is that new perspectives on the phenomena of interest are generated that can then be reintegrated into the scientific literature for evidence of their novelty or coherence with respect to existing knowledge.

This reintegration into the empirical context of the research is the purpose of Second Order Constructs. Insights presented in the empirical context may help make to situate the insights in the broader scientific endeavour of health-care.

3.5.2.2 Inference builds new or elaborated theories

King et al assert that the concept of research inference lies at the heart of the underlying logic of both quantitative and qualitative research outcomes.[404] To that end, inference can serve four outcomes:

- defining causal associations,

- defining statistical relationships,

- making generalisations between theory and the universe, and

- creating hypotheses from hermeneutic foreknowledge.[405][406]

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[404] G King, R Keohane and S Verba, *Designing Social Inquiry: Scientific Inference in Qualitative Research* (New Jersey: Princeton University Press, 1994), 3.

[405] A Ward, "The Role of Causal Criteria in Causal Inferences: Bradford Hill's 'Aspects Of Association' ", *Epidemiol Prospect Innov* 6 (2009), 2.

[406] T McKeown, "Case Studies and the Statistical Worldview: Review of King, Keohane, and Verba's Designing Social Inquiry: Scientific Inference in Qualitative Research", *International Organisation* 53, no.1 (1999), 161-190.

In relation to causation, Imbens and Rubin stipulate that "causality is tied to an *action* (or manipulation, treatment, or intervention) applied to a *unit*" and from which causal inferences are drawn via deductive logic.[407] Given the strongly inductive, exploratory nature of the methodology employed in this inquiry, and the emphasis on the structure of relations as opposed to descriptions of causation, inference directed at causal associations is not a primary focus and is examined no further. No statistical analyses are to be performed, and so defining statistical inferences is not a feature of this inquiry either. On the other hand, an explicit goal of exploratory qualitative analysis can be to draw inferences for generalisation from theory to universal properties.

Inferences for generalisation require additional consideration of what particular generalisations are being supported. Ritchie and Lewis suggest that there are three families of inference relevant to generalisations:

1. *Representational generalisation*: the question of whether what is found in a research sample can be generalised to, or held to be equally true of, the parent population from which the sample is drawn

2. *Inferential generalisation*: the question of whether the findings from a particular study can be generalised, or inferred, to other settings or contexts beyond the sampled one

3. *Theoretical generalisation*: the drawing of theoretical propositions, principles or statements from the findings of a study for more general application.[408]

The exploratory design of this research is focused on Ritchie and Lewis' first and third 'families' of representational generalisation and theoretical generalisation inferences. Inferences are drawn from the evidence acquired in the fieldwork to form correlations of the eidetic elements of the clinical encounter. These inferences are based on the saturation of themes that support the creation of First Order Constructs, and on the viability of each construct when tested phenomenologically in the imaginative variations of the Second Order Constructs. How well each Construct operates as a generalisation of theory from its instance in the experience of each participant lends additional inferential strength. Theory generation can then proceed from those Constructs that survive imaginative variation. Finally, the thesis is subject to critical review by peers, and

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[407] G Imbens and D Rubin, *Causal Inference in Statistics, Social, and Biomedical Sciences* (New York: Cambridge University Press, 2015), 4.

[408] J Ritchie and J Lewis, eds., *Qualitative Research Practice: A Guide for Social Science Students and Researchers* (London: Sage, 2003), 264.

will, upon its publication, have its ultimate inferential potential assessed in the public discourse of professional criticism.

3.5.2.3 Evidence supports new knowledge

Evidence-making in descriptive phenomenology for research is based upon the philosophy of phenomenology, which includes the epoché, reduction and the vocative. These conditions are essential because they steer the researcher towards the goal of *evidence for the evidences* that are part of the substance of the phenomenological inquiry.[409]

The concept of evidence in phenomenological inquiry allows for movement from the individual case to the general, as the method pares away the assumptions and psychological ephemera of the 'natural attitude' and mundane ego of subjectivity. Instead it turns to the essences of phenomena that are given for any consciousness in a world, the intersubjective space of the world, in which a thinker is a manifestation of that thing of evidence.[410]

This seems a wholly problematic conception of evidence (for truth or otherwise) in the biomedical paradigm in which the value of evidence is described by its so-called objectivity, neglecting a propositional type of truth that arises subjectively and inductively.[411][412] However, the use of phenomenological inquiry to generate theory in professional disciplines is longstanding.[413] In his critique of King et al and their Popperian view of the supremacy of classical statistical logic over the value of case studies, McKeown argues that:

It is not merely that a case provides an explanation for a particular set of events. Rather, the source of its potentially large impact is its capacity to incite us to reformulate our explanations of previously studied events.[414]

'Previously studied events' are, in medicine, the basis of clinical foreknowledge from existing research, whether formulated in a qualitative or quantitative paradigm, without

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[409] J Kockelmans, *Edmund Husserl's Phenomenology* (Indiana: Purdue University Press, 1994), 163.

[410] T Seebohm, *History as a Science and the System of the Sciences: Phenomenological Investigations* (Switzerland: Springer, 2015), 386-389.

[411] G Gillett, "Medical Science, Culture, and Truth", *Philos Ethics Humanit Med* 1 (2006): 13.

[412] L Briskman, "Logic in Medicine - Doctors and Witchdoctors: Which Doctors are Which?-II", *BMJ* 295 (1987): 1108-1110.

[413] A Davidsen, "Phenomenological Approaches in Psychology and Health Sciences", *Qual Res Psychol* 10, no. 3 (2013): 318-339.

[414] T McKeown, "Case Studies and the Statistical Worldview: Review of King, Keohane, and Verba's Designing Social Inquiry : Scientific Inference in Qualitative Research", *Int Organisation* 53, no. 1 (1999): 175.

which no new knowledge can appear.[415] In this inquiry, multiple instances of clinical encounter, as described and recounted by the research participants, are formulated into Second Order Constructs which explicitly aim to integrate the case with the general. Inference from the case to the general can achieve, as McKeown observes, the reformulation of what is generally known of the nature of the clinical encounter, as described in medical literature.

The objectivity of reality required in a logical positivist ontology requires that any observer at any time will 'see' the same reality. In the critical realist perspective, no-one can 'see' the whole of the truth of something given, particularly in complex relationships. It can only be built inferentially through the sharing of lifeworld perspectives; by bracketing of the everyday life experience in favour of an intersubjective space of relations; and through the careful representation of fragments of different experiences towards a unity of description.[416]

Using inductive logic, one builds an inferential line of evidences that supports the creation of a 'problem-solving' schema, as opposed to the more logical positivist objective of finding a 'truth' statement, using a 'calculus of problems' that defines the relations of entities of the system under examination.[417]

Empirical Phenomenology uses the 'calculus of problems', in this case the many instances of clinical encounter described, to supply evidentiary strength for the survivability of the explanation, not as a truth statement *per se*, but as an inferential logic that asserts certain ideas about the relations of elements and phenomena.

3.5.2.4 Verification supports new practices

The concept of scientific verification in the broadest sense involves "testing of hypotheses, as by experimentation and statistical analyses" to define the 'truth' of a proposition or theory.[418] Denzin and Lincoln highlight the allegations made by positivists that "experimental qualitative researchers write fiction, not science, and have no way of

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[415] P Diesing, *How does Social Science Work? Reflections on Practice* (Pittsburg: University of Pittsburg, 1992), 108.

[416] J Bisman, "Postpositivism and Accounting Research : A (Personal) Primer on Critical Realism, Australasian Accounting", *Business and Finance Journal* 4, no. 4 (2010): 3-25.

[417] A Kolmogorov, "On the Interpretation of Intuitionistic Logic", *Mathematische Zeitschrift* 35 (1932): 58–65.

[418] A Giorgi, "The Context of Discovery/Context of Verification Distinction and Descriptive Human Science", *J Phenom Psych* 17, no. 2 (1986): 151.

verifying their truth statements", a view which can be understood as being a consequence of the empirical formulation of verification.[419]

With a presupposition of proof as the standard for verification in deterministic worldviews, verification in uncertain or complex settings can be a troublesome goal.[420] Levin argues that a worldview, characterised in a logic of phenomenology applied to insight, inference and evidence, is *phenomenological essentialism*. That is, intentional description and the discipline of transcendental logic in the epoché and bracketing coalesce to arrive at "defensible *a posteriori* hypotheses expressed in language, about what we have good reason to believe are necessary, among diverse sorts of intentional description".[421] However, critics disagree both on what is attributed to Husserl as his view on phenomenological truth, and on other forms of applied philosophical truth verification in phenomenological work.[422]

One solution is to view the objective of verification as supra-ordinal to this singular piece of phenomenological work and me as author. My 'within-subject' 'essentialist' verification models of bracketing and imaginative variations will be presented for criticism. Verification in part relies upon the resilience of the asserted essences of the phenomena of clinical encounter under the scrutiny of the lifeworlds of others with experience of the phenomena. The descriptions and the imaginative variations are verified by the resonance they generate in the lifeworlds of others.

A tension remains between the positivist scientific need for 'objective' verifications in statistical and empirical modes and the nature of the 'intersubjective' mode of evidence accumulation in the phenomenological inquiry. The tension is in part resolved, however, in recognising that the mode of phenomenological inquiry does not logically lend itself to the contemporary preference for empirical operants of validity. This is neither a strength nor a weakness; it simply *is*.

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[419] N Denzin and Y Lincoln, eds., *Handbook Of Qualitative Research* (Thousand Oaks: SAGE, 2017), 11.

[420] E Honour, "Verification and Validation Issues in Systems of Systems", in *1st Workshop on Advances in Systems of Systems,* eds. Larsen, Legay and Nyman, *EPTCS* 133 (2013): 2-7.

[421] D Carr and E Casey, eds., *Explorations in Phenomenology: Papers of the Society for Phenomenology and Existential Philosophy,* (Dordrect: Springer, 1973), 170.

[422] M van de Pitt, 'Phenomenology: Vigorous or Moribund?", *Husserl Studies* 5 (1988): 3-39.

Rather than seeking a 'truth statement', the exploratory mode provides verification through the strength of assertability about the convergence and completeness of the data and the logic devices used to express the nature of the phenomena being examined.[423] [424]

In this inquiry the descriptive phenomenological work of the First and Second Order Constructs is used to:

(a) formulate a problem-solving statement about the nature of the phenomena of clinical encounter to

(b) satisfy a presupposition of the theoretical model of an ontology of structure of relations which is

(c) subjected to other types of falsification.[425]

In this way, in faithful observance of the phenomenological method, the being-in-the-world of the textual representation of this inquiry (the thesis) is not an abstraction from the work, but the work itself, a thoroughly appropriate model of verification in the phenomenological tradition.

3.5.3 Biographical disclosure from the Author

Assessing the trustworthiness and validity of empirical phenomenology in part relies upon a level of transparency from the researcher about their historical context, in order to make possible a critical assessment of the inductive aspects of their work, and the degree of reflexivity the researcher has achieved in seeing themselves and their influence on the qualitative work undertaken.[426] In a phenomenological inquiry, the reader must be able to trust that the author has bracketed their own natural attitude and undertaken a rigorous inquiry faithful to the methods of the research approach. A biographical history is intended to provide some insight into a researcher's professional and personal history for that purpose.

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[423] C Yu, *Philosophical Foundations of Quantitative Research Methodology* (Maryland: University Press of America, 2006), 42.

[424] G Tuzet and D Canale, eds., *The Rules of Inference. Inferentialism in Law and Philosophy* (Bocconi: Egea, 2009), 29-44.

[425] D Jacquette ed., *Philosophy, Psychology, and Psychologism: Critical and Historical Readings on the Psychological Turn in Philosophy* (Dordrecht: Springer Science & Business Media, 2006), 65.

[426] G Durepos, A Mills, A and E Wiebe, eds., *Encyclopedia of Case Study Research: Volume 2* (Thousand Oaks: SAGE, 2010), 788-789.

Van Manen acknowledges that phenomenological traditions struggle to describe "how to make phenomenological philosophy accessible and do-able by researchers who are not themselves professional philosophers or who do not possess an extensive and in-depth background to relevant phenomenological philosophical literature".[427] Spinelli is more critical:

Phenomenological philosophers are notorious for the obscurity of their language and the convoluted manner in which they express their ideas... so that, at first, it may seem that phenomenology's central arguments are not likely to be easily grasped, or correctly understood, by non-philosophers and might, as a result, be seen to be of limited or dubious value.[428]

Van Manen recommends a new direction, an "agogical approach" in which a novice is shown through example what it is and means to have a phenomenological perspective for inquiry into what might be an otherwise "bewildering spectacle" of concepts, language and ideas[429] [430]. Verhoeven extends the challenge to its essential conclusion in the context of a doctoral thesis, where the writer must make a choice as to whether they wish to write *about* phenomenology, or *do* it.[431]

In actuality, it has been a process of both writing and thinking *about* the 'bewildering spectacle' of phenomenological philosophy, in order to proceed with enough technical precision to *do* a phenomenological inquiry. Early thesis manuscripts contained tens of thousands of words dedicated to detailed philosophical ruminations and careful juxtapositions of phenomenological theory and critique from biomedical and statistical perspectives. Egoically, I aimed to protect myself against being framed as a dilettante either by the positivists of my own tribe, or by the experts of qualitative research in whose eyes I am clearly a novice.

In addition to the specifics of phenomenology, the broader paradigm of qualitative research posed challenges. I grappled with the critiques by positivists about the verification and validity of qualitative studies, and in the early years I saw my challenge as one of bridging the divide between what, intuitively, seemed the only sensible strategy for my research (qualitative description) and the context of my professional practice, dominated by logical positivism and the experimental method. I was suffering from what

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[427] van Manen, *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing*, 3-4.

[428] E Spinelli, *The Interpreted World: An Introduction to Phenomenological Psychology* (London: SAGE, 2005), 2.

[429] van Manen, *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing*, 4.

[430] E Spiegelberg, *Doing Phenomenology: Essays on and in Phenomenology* (The Netherlands: Springer Science & Business Media, 2012), 14.

[431] C Verhoeven, *The Philosophy of Wonder* (New York: Macmillan, 1972), 5-39.

Morse describes as the "ingrained quantitative baggage" associated with my pedagogical training in medicine and it took some years to find stability in qualitative methods "in a world that does not value, and is constantly questioning, the nature, role, and function of qualitative knowledge".[432]

My development as a professional working in psychiatric practice, in parallel with my progress as a fledgling scholar, provided a happy circumstance of synergistic worldview development. In clinical practice, I increasingly learned the value of subordinating scientific evidence deduced from statistical means in favour of a deeper encounter with the individual histories of and dialogue with patients, towards the goal of authentic understanding of their lived experience. I learned to separate that which was essential and inalienable for the individual from that which characterised the person as a statistical point on a probability distribution of pathology and treatment. Science was wrought to serve the individual embodiment of the patient.

The analytic history of psychiatry is one in which the 'case history' or 'case series' informed theories that were generalised to a common psychology of personhood. My patients taught me the value of this approach. In time, as I surveyed different research strategies, I came to encounter phenomenology, which, like analytic theory, used disciplined critical reflections on detailed histories of experience as the mode of analysis and discovery of phenomena. I came to appreciate the distinctions and similarities between the foundations of a phenomenology of the psyche and the philosophy of phenomenology. Within this personal professional context, it is not surprising that empirical phenomenology, with its roots in the phenomenology of psychology and Husserlian description, appealed.

Since childhood, I have privileged the intellect above all other human capabilities. In adolescence I struggled with reconciling experiential phenomena of an intuitive nature, such as a love of music and art, with the primacy of the intellect, until I became familiar with the field of neuroscience. I believed that eventually all experience could be reduced to the function of the brain, and these phenomena, though no less rich as experiences, would become explainable. Perhaps in recognition of this drive towards the ultimate deterministic explanation of human life, I entered surgical training after medical school.

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[432] Morse, "Insight, Inference, Evidence, and Verification", 1-7.

From the beginning of my medical career as a practitioner, the vicissitudes and uncertainty of the human condition became not the exception, but very much the rule. This was no more so than when I entered psychiatry training and, having absorbed the rules and formulae of diagnosis and treatment of psychiatric illness studiously over several years, discovered the severe limitations of these in the face of the living entity of the patient. Boundaries of diagnoses were fuzzy, normative experiences of human life such as grief were pathologised as depression, and the categorical approach of 'biological psychiatry' became suspect in the face of growing evidence that medical treatments were no better than placebo. In short, I learned that I was not 'treating' psychiatric illness, I was bearing witness to the lived experience of a singular human being whose struggle was to make meaning of their suffering in the hope that they might find some relief.

Academically, alongside my appetite for medical science, I read widely in the general scientific literature in areas such as ecology, physics and human history. Somewhere around the end of my medical studies I happened upon a copy of the proceedings of the inaugural meeting of the Santa Fe Institute, and was overwhelmed by intellectual excitation and confusion as I tried to decipher the impossible stories of complexity within. Around 2011 and 2012, just after commencing my doctoral work, I encountered a range of theoretical physics written for the layperson that introduced the Heisenberg uncertainty principle, quantum mechanics, fractals, and the deep issue of probability in a seemingly deterministic world. My intellectual tendency towards determinism in the general sense of human experience was overthrown by the tantalising possibilities that phenomena of the deterministic world are founded upon probabilities and uncertainties of the microscopic. This fitted well with my lived experience as a clinician, in which there was value in a population approach to patterns of diagnoses and treatments as long as its limits at the individual level were explicitly acknowledged and there was careful calibration and monitoring of interventions in the idiosyncratic circumstances of each patient.

With respect to the origins of my research interest in the 4-Hour Rule, the most important provocation towards undertaking a formal project came from five years of teaching physicians and medical students in hospitals and medical schools around Australia. I worked with thousands of individuals in group learning sessions, and was struck by the unanimous collective angst of doctors towards the implementation of the 4-Hour Rule. My concern was that this collective angst was a reaction against a broader set of perceived injustices, as I understood there were major benefits of the 4-Hour Rule to patients. I surmised that, notwithstanding genuine localised issues of bullying and

administrative interference in clinical care, the professional anger was a function of changing power relations and prestige, rather than a genuine issue with patient outcomes. This suspicion was reinforced by a conversation with a friend from the Australian Productivity Commission who had characterised the whole hierarchy of medicine as a cartel designed to reinforce anti-competitive behaviour and market manipulation for professional gain, an observation uncomfortably coherent with political issues in health-care at that time.

In the end, I had to find peace with the possibility that most deterministic characterisations of medicine — its hierarchy, practise, and purpose in society — were like all stereotypes: situated in a milieu of truth and untruth depending on perspective and context.

3.5.4 Data generation

3.5.4.1 Ethics approval

Human research ethics approval was sought from, and granted by, the St Vincent's Hospital Sydney Human Research Ethics Committee (see Appendix 5), and reciprocal approval granted by the Western Sydney University Human Research Ethics Committee (see Appendix 6). The study impact was deemed 'low impact' on human research subjects, and approval was given for recruitment through advertising to medical practitioners working at a tertiary hospital in Sydney, as well as promotion through a representative organisation of medical practitioners in New South Wales, Australia. Research participation was advertised through email and hospital-based medical practitioner fora (e.g. junior doctor education sessions, Grand Rounds).

Each candidate was given a plain language summary of the research plan, asked to consent to research participation and advised of their right to withdraw at any time, and reassured that all data were to be de-identified (see Appendix 7).

3.5.4.2 Site selection, recruitment and interview method

Site selection

Site selection was primarily based on convenience, with some modification in respect of my prior work in medical education in over 60 hospitals across Australia over a five-year period. Avoiding research in one's 'own backyard' is endorsed across qualitative research design literature in order to avoid the pitfalls of unethical disclosures and influence from

power relations, and to maintain confidentiality.[433] Glesne and Peshkin go as far as to suggest that being a recipient of intimate knowledge of one's own work environment is "potentially dangerous" and may be unwanted or distressing for the researcher, or place the researcher in a compromised position with respect to colleagues.[434] As a result, site selection was limited to the five public hospitals in the area of convenience in which I had not conducted prior education and where I was unknown to a large number of staff. Sites were approached for their interest in supporting the research, and four responded in the affirmative.

Recruitment

From 2011 onwards, all public hospitals in Australia were required to measure and report 4-Hour Rule targets, and thus the whole population of medical practitioners in public hospitals would have come into contact with the 4-Hour Rule. Satisfying the phenomenological criteria of representativeness, any medical practitioner working in a public hospital in the area of convenience was suitable for recruitment.[435] Prospective participants responded via email to advertisements inviting participation among clinicians working in the four public hospitals supporting the project.

Each participant was assigned three identifying characteristics: sex (Male or Female), level of professional attainment (Trainee or Consultant), and medical discipline (Emergency Medicine or Non-Emergency Medicine). These three characteristics were selected on the basis of previous health services research that suggested that they could lead to differences in response to a range of workplace interventions.

In phenomenological research, estimates of useful numbers of interviews vary widely, with Morse and Creswell believing as few as six participants can satisfy the need for saturation.[436] [437] The caveat to the concept of an ideal number of interviews is best summarised by the phrase 'it depends': on the questions being asked in the research, the

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[433] J Creswell, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (Thousand Oaks: SAGE Publications, 2013), 151.

[434] C Glesne and A Peshkin, *Becoming Qualitative Researchers: An Introduction* (New York: Longman, 1992), 114.

[435] M Englander, "The Interview: Data Collection in Descriptive Phenomenological Human Scientific Research", *J Phenom Psych* 43 (2012): 13-35.

[436] J Morse, "Editorial: Determining Sample Size", *Qual Health Research* 10, vol. 1 (2000): 3-5.

[437] Creswell, *Qualitative Inquiry and Research Design,* 157.

importance of the findings with respect to such issues as population funding models, or the risks and implications of findings to established practices.[438]

Out of 12 interested doctors, four undertook completed interviews.

Interview method

In-depth interviews offer a rich source of data from which to build an understanding of the problems and underlying theoretical constructs of the impact of administrative interventions. Consequently, in-depth interviews were preferred over other qualitative data-generating methods such as questionnaires.[439]

Interviews were conducted face-to-face at a location convenient to the participant.

Each participant was informed that the interview should run for between 45 and 60 minutes, and consisted of three broad sections of a series of related questions. However, the interview could move in any particular direction the participant thought relevant. The interviews were semi-structured, with questions asked in whichever sequence responded most naturally with the flow of conversation. The questions were grouped in three themes: The Patient-Doctor Relationship, Clinical Performance, and Productivity (see Appendix 8). I approached the interview with the goal of remaining in the open-ended spectrum of questioning, and used clarifying interjections only where, in the moment, it seemed essential to understanding.

Two recording devices were used to capture dialogue: a primary dictaphone and a back-up of smartphone audio recording. Each recording from each device was transferred to a computer and stored under password security protocols. The recordings were destroyed after transcription and annotation to protect anonymity, due to the identifiable features captured within them.

3.5.4.3 Analysis and synthesis of data

Interviews were transcribed verbatim into text format and then ingested into NVivo V11.4.0 software. This process was undertaken in the epoché as part of the first encounter with the textual representation of the naïve descriptions.

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[438] S Baker and R Edwards, "How Many Qualitative Interviews is Enough?" National Centre for Research Methods, Economic & Social Research Council (Unpublished) (2012), 3.

[439] N Britten, "Qualitative Research: Qualitative Interviews In Medical Research", *BMJ* 311, no. 6999 (1995): 251.

Content analysis using inductive theme identification (nodes) commenced, within the epoché and phenomenological bracketing, with reading the transcripts and locating units of meaning in the unadulterated words of each participant's individual transcript.[440] [441] [442] Once each transcript was judged as being exhausted of its units of meaning, the transcripts were combined as one and reparsed for additional units of meaning.

Within the epoché and bracketing, First Order Constructs were identified from the units of meaning coded in each transcript. Where units of meaning overlapped, either within or between participants, the transcript nodes were combined and, if appropriate, a collective unit of meaning was ascribed. When this process was judged to be exhausted, the First Order Constructs were identified, separated out into individual themes and annotated within the software. Each First Order Construct was then re-evaluated against the original transcripts to qualitatively assess its representation and authenticity as output of those data. No further analysis of these findings was undertaken as they represented the lifeworlds of the participants and were the 'given' of their experience of the phenomena of the clinical encounter.

Over time, each First Order Construct was considered with attention directed towards professional knowledge and research literature, in imaginative variations on the Constructs. Intuitions, inspirations and the foreknowledge of *a priori* themes from the research literature were all given priority and linked to individual, or groups of, First Order Constructs to begin the process of Second Order Construct formation. This yielded a series of connected and disconnected, coherent and conflicting ideas, patterns, and theories. No editing or excessive organisation was undertaken until after I was satisfied that the Construct was exhausted.

The Second Order Constructs were then reviewed collectively and individually to begin to formulate the threads of coherent theory to tie First and Second Order Constructs together. These were tested rigorously against the literature for any epistemological incompatibility or countervailing evidences. Strong incompatibility or countervailing arguments required a Construct to be discarded or revisited critically in terms of its place in the totality of the research work.

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[440] H Hsieh and S Shannon, "Three Approaches to Qualitative Content Analysis", *Qual Health Research* 15 (2005): 1277.

[441] A Giorgi, *The Descriptive Phenomenological Method In Psychology: A Modified Husserlian Approach* (Pittsburg: Duquesne University Press, 2009), 57-67.

[442] Aspers, "Empirical Phenomenology", 1-12.

Directed content analysis, using *a priori* nodes determined from *Chapter 2: Literature Review*, was then completed for each transcript.[443] Further empirical data analysis aided triangulation. Summative content analysis in the form of word frequency measurement, quantitative thematic saturation analysis and participant-theme comparison proceeded, using the software capabilities of NVivo.[444] [445] [446] This summative analysis triangulation helped assess theme saturation and to highlight any indications of differences arising from baseline characteristics of sex, speciality, and stage of career.

During the processes of content analysis and synthesis, any personal feelings, theorising, or *a priori* professional or academic knowledge that surfaced in the process was noted down and filed away separately, without further conscious engagement. In my psychiatric practice, this is the discipline of monitoring the counter-transference,[447] which is aligned with Bhaskar's idea of the state of mind in which one 'monitors the monitoring' in the encounter between consciousness and its content. This procedure is aimed at maintaining transparency regarding any lapses in bracketing. The notes were then cross-referenced during the writing up of the thesis to determine if the surfaced content had interfered with or misdirected identification of the units of meaning or Construct formation.

3.5.4.4 The emergence of saturation in the interviews

Many qualitative methods using in-depth interviewing address the concept of 'saturation' of information around synthetic nodes and themes.[448] [449] Morse opines that the concept of saturation, though well used in the qualitative literature, has lacked proper definition and methods of 'calculation' for the researcher.[450]

I made an assessment of the saturation of units of meaning induced from conventional content analysis. Data were compared with summative assessments of nodal saturation

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[443] H Hsieh and Shannon, "Three Approaches to Qualitative Content Analysis", 1277.

[444] C Pope, S Ziebland and N Mays, "Analysing Qualitative Data", *BMJ* 320, no. 7227 (2000): 114-116.

[445] J Bringer, L Johnson and C Brackenridge, "Maximising Transparency in a Doctoral Thesis: The Complexities of Writing about the use of QSR*NVIVO Within a Grounded Theory Study", *Qual Research* 4, no. 2 (2004): 247-265.

[446] E Welsh, "Dealing with Data: Using NVivo in the Qualitative Data Analysis Process", *Forum: Qual Soc Research* 3, no. 2 (2002).

[447] R Waska, *Moments of Uncertainty in Therapeutic Practice: Interpreting Within the Matrix of Projective Identification, Countertransference, and Enactment* (New York: Columbia University Press, 2011), 15.

[448] M Mason, "Sample Size and Saturation in PhD Studies Using Qualitative Interviews", *Forum: Qual Soc Research* 11, no. 3 (2010).

[449] M O'Reilly and N Parker, "'Unsatisfactory Saturation': A Critical Exploration of the Notion of Saturated Sample Sizes in Qualitative Research", *Qual Research* 13, no. 2 (2013): 190-197.

[450] J Morse, "Editorial: The Significance of Saturation", *Qual Health Res* 5, no. 2 (1995): 147-149.

based on the frequency of representation and heterogeneity of individual units of meaning to determine when a satisfactory level of saturation had occurred. The rationale for decisions on saturation is provided in the results.

3.6 Presentation of findings

Although there is a tradition of phenomenological inquiry and dissemination within health-care, the small representation of phenomenological work within the total published literature on health services evaluation (or general medical literature) suggests that medical practitioners and other health-care professionals may have limited experience in interpreting and assimilating phenomenological findings into their professional knowledge and practice.[451] [452]

This challenge is addressed with the use of empirical evidence in support of the First Order Constructs and elaborated in arguments based on the propositional inferences from the Second Order Constructs of the empirical phenomenology epoché and bracketing. A written narrative representation of each Construct is provided, with the evidencing strings of participants' interviews included under each First Order Construct. A second narrative representation of the imaginative variations on the First Order Constructs is then presented as the Second Order Constructs. The imaginative variations turn on data from within the First Order Constructs as well as the literature and theory from the disciplines of medicine, physics, engineering, the arts and organisational management.

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[451] See Appendix 9.

[452] C Sikorski, H Gleamer and A Bramesfeld, "Quantity Versus Quality: A Review on Current Methodological Dispute in Health Services Research", *Psychiatrische Praxis* 37, no. 7 (2010): 322-328.

CHAPTER 4: Part 1 Findings — First Order Constructs and Other Data

4.1 Overview

This chapter presents the findings of interviews conducted with four medical practitioner participants over 18 months of fieldwork. The chapter describes the conduct of the interviews, data handling and transcription, content analysis, and empirical phenomenology First Order Construct formation.

For the purpose of conceptual clarity, textual analyses that were undertaken in the form of content analysis and participant comparisons are presented first. As noted in *Chapter 3: Methodology*, content analysis and summative participant interview comparisons are not strictly part of Empirical Phenomenology. However, these data familiarise the reader with some of the general features of the content of the interviews, while providing additional useful information to support verification and trustworthiness discussions that follow in *Chapter 6*.

First Order Constructs are the first stage of findings from an empirical phenomenology inquiry and represent the synthetic descriptions of 'ideal types' and meaning structure of the meaning units of each participant and the interviews in totality.[453] Each Construct is presented with detailed supporting indicators of the meaning units upon which they are based, in verbatim, from transcripts of each interview. The descriptive content of each of the Constructs is intended to determine if there is a structure of relations within the phenomena of interest that makes sense of the different elements found in the participants' descriptions. If a structure of relations is found to potentially exist within and between the elements of the participants' naïve descriptions, it may inform a more fundamental intersubjective ontological organisation of the clinical encounter, practitioner performance, and the environment of the Emergency Department. The structure of relations may then provide some insight into how the intervention of the 4-Hour Rule may have affected the nature of those relations.

Second Order Constructs represent the imaginative variations around the First Order Constructs and aim to provide a description of an intersubjective extension of the naïve descriptions of participants. From the intersubjective space, each Construct is further

[453] Aspers, "Empirical Phenomenology", 1-7.

contextualised within empirical knowledge related to the research work. The aim of each Construct is to offer coherent meaning for a structure of relations that is grounded in the individual and collective lifeworlds of the research participants and at the same time articulates rigorously with the empirical context of the research. Through this process, the chosen theories that best provided phenomenological explanation evolved, and these was tested and clarified. Second Order Constructs are detailed in *Chapter 5*.

The findings of the First Order Constructs show that despite representing a range of experience and disciplines across medicine, doctors have quite homogeneous experiences and motivations in relation to the clinical encounter. Each privileges the patient-doctor relationship above all other dynamics and demands of the clinical environment, and holds a powerful sense of responsibility for the wellbeing and lives of each individual patient. In the participants' experience, the environment of the Emergency Department and relationship dynamics between doctors and other health and non-clinical staff are described as having changed significantly as a result of the introduction of the 4-Hour Rule. There is unanimous agreement that the impact of the 4-Hour Rule at the level of the individual clinical encounter has the potential for adverse effects on both clinician and patient.

In addition to the empirical phenomenological inquiry, summative data analysis using computer-assisted technology suggests that there were few, if any, major thematic divergences between participants. The interviews generated somewhat homogeneous collections of responses, and nearly all the content from each interview coded as one or more meaning units within First Order Constructs. Rather than demographic differences associating with differences in interview content, it was differences in interview styles that tended to correlate with variations in the frequency of some themes.

Directed content analysis offered some triangulation of findings to suggest that doctors, irrespective of age, sex or training, have strong and converging views about the dynamics of the clinical encounter, the personal and contextual factors that affect their performance within the patient-doctor relationship, and the powerful impact of the 4-Hour Rule on the dynamics between doctors, patients and other work colleagues.

4.2 Participant interviews

Interviews lasted between 50 and 65 minutes. Two interviews were conducted in medical offices within hospital grounds; one was conducted in the participant's home at their request; and another took place at a café nearby a workplace.

Each interview was recorded using an electronic dictaphone, with a secondary recording taken on a mobile phone. The recordings were transferred to a hard-drive secured by two-step authentication security procedures, and the original recordings deleted from the mobile devices.

At the commencement of each interview the participant was thanked, their consent reviewed and they were informed of the general scheme of the semi-structured interview. Each was told that although there was some structure anticipated, they were free to explore and describe anything that came to mind during the course of the interview.

The structure of the interview was very closely framed by the semi-structured question format with little deviation from the flow of anticipated questions. It is noteworthy that the interviews flowed quite naturally from question to question, and on only a few occasions across the interviews did there feel to be a significant sudden transition from one topic to the next.

On occasions clarification and follow-up questions to the open-ended questions were required to ensure I understood the participant's response. There were some moments in which participants' responses resonated strongly with some of the themes of existing literature, and attempts were made to draw some of these commentaries out in more detail. For the most part, however, there was a recognisable flow of question and answer, interspersed with some more interrogative or clarifying questions that transitioned smoothly from topic to topic.

Participants appeared relaxed throughout the interviews. All participants, at some point during their interview, referred to my own medical practice history in two similar ways. The first was as a method for calibrating their responses to questions, checking to see how much knowledge I had of the details of the responses they were giving. In these instances, if I was confident that I understood exactly what was being communicated I would respond in the affirmative. However, there were occasions when participants referred to workplace dynamics or structural issues with which I was not familiar, though

they spoke in a manner suggesting they assumed I did understand. On these occasions participants were asked to provide more detail to ensure comprehension.

In the second manner, participants would make statements seeking collegial reassurances, often regarding difficult or controversial themes. In these instances I provided a general reassurance that they could speak freely without any concern that I was passing any kind of judgment. I also asked a clarifying statement or sought more critical reflection from the participant about the nature of their uncertainty or discomfort relating to the theme that prompted them to seek collegial assurance.

In the majority of cases, participants were required to return immediately to clinical duties and so interviews were terminated after responses to the final set of semi-structured questions. Participants were thanked for their time. All participants reported enjoying the experience of the interviews and were curious about the outcomes of the interviews.

4.3 Interview data handling and transcription

Each interview was transcribed to a separate Microsoft Word document. The first interview took approximately 4 hours to transcribe the 56 minutes of recording. Subsequent improvements in processing speed resulted in slightly improved transcription times, with an average of three minutes transcribing for each minute of interview time. Each transcription was re-checked once against the audio recording of the interview at speaking-speed to identify errors. Where any word or phrase was indecipherable, even after use of technology to increase audibility, this was noted in the text and no guess was made as to what was said.

Each transcription included the verbatim words, pauses and linguistic devices (e.g. 'Um', 'Oh', 'You know') expressed by the participant. The researcher's exact wording for each question was transcribed. Interruptions, cross-talking and other external phenomena, such as loud noises, were noted within the transcription of the interviews. Notable emotive expressions such as laughter were also noted.

Non-verbal aspects of communication in face-to-face encounters are important features of the overall communicative context of research interviews. As a qualified medical practitioner with expertise in in-depth psychiatric interviews, and having conducted thousands of psychiatric interviews over the past 10 years, I have developed the ability to store and reference the attendant affective and non-verbal associations of people's communications in-line with their verbal histories with good degrees of accuracy, verified

by supervisors and examinations over many years. During interview transcription, significant non-verbal, phonic, gestural and other semiotic details of the face-to-face encounters were coded into the transcripts. Hence, though not coded during the interviews themselves, I am confident of the reliability of the associations between the spoken and non-verbal indicators of significance communicated by the participants at certain points of their interviews.

4.3.1 Summative content analysis

For clarity of expression only, the results of the summative content analysis of the interview data are presented first. As outlined in *Chapter 3: Methodology*, the process of content analysis described below occurred *after* the phenomenological inquiry, but on balance it provides such a useful familiarisation with the data that it is presented out of sequence here. This sequencing supports a more coherent flow of ideas and syntax and avoids interruption to the vocative of Second Order Constructs and Discussion, which are continuous dialogical processes.

Data were analysed using directed content analysis and some summative content analysis. The former is an approach that begins with an analysis of data based on *a priori* nodes and themes drawn from past research. This is enriched with inductive nodal identification following immersion of the researcher in the data. Summative analysis, using the analytic power of the NVivo software to create word clouds and word frequency tables, was used to assess internal consistency of the inductive processes with the objective data sources, and as an interrogative method engaged to uncover additional nodes or themes for analysis.[454]

25 *a priori* nodes were assigned, based on questions asked routinely in the semi-structured interviews and from the literature review. These are detailed in Figure 4.1.

The summative analyses are reported in raw number and proportions to assess the homogeneity and completeness of the interview data with respect to the questions asked in the interviews, and as a triangulation to the researcher's synthesis of responses and the strength of representation of these data.

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[454] B Wildemuth, *Applications of Social Research Methods to Questions in Information and Library Science* (Westport: Libraries Unlimited, 2009), 308-319.

A Priori Nodes Group	
Question 1	*- What Happens Between a Doctor and Patient in the Clinical Encounter*
	- Contextual Factors for the Patient-Doctor Relationship
	- Formative Learning Experiences
	- Patient-Doctor Relationship Fit in the Health System
Question 2	*- Fundamentals of Good Clinical Practice*
	- Performance Impacts Day-to-Day
	- Approach to Performance Issues in Colleagues
	- Influence of the Profession on Practitioner Performance
	- Influence of Stress, Appraisal and Coping
Question 3	*- Awareness of the 4-Hour Rule*
	- Defining Productivity in Hospitals
	- Identification with the 4-Hour Rule
	- Who Controls Productivity
	- Impact of the 4-Hour Rule on Patient-Doctor Relationship
Other Literature Reference Nodes	
Influence of Broader Health System at State and Federal Level	
Culture	
Ethics	
Hospital System Level	
Professionalism	
- Identity	
- Professional Development	
- Training Issues	
- Within and Between Profession	
Stress, Appraisal and Coping	

Figure 4.1: *A Priori* Nodes Coded by Question Group

4.3.2 Summative analysis results

An average of 94% (range 91% to 98%) of all interview text was coded to one or more thematic nodes for further analysis. A total of 44 nodes (which are equivalent to the meaning units of empirical phenomenology to be described below) were created over three months of analysis. 25 were *a priori* based on previous comprehensive literature reviews. A further 19 nodes were developed from inductive analysis of interview scripts (see Figure 4.2). All interviews were re-analysed at the end of the three-month cycle to ensure that referencing and coding for the complete set of nodes had been achieved.

Inductive Node Themes	Interviews (n)	Inductive Node Themes	Interviews (n)
A perfect model that just doesn't exist	*2*	Non-rational problem-solving	*4*
Actual interruptions during interview	*2*	Nurse interactions around the 4-Hour Rule	*3*
Ambiguity of information	*2*	Psychodynamic influences in the patientdoctor relationship	*4*
Having someone senior making decisions the first time	*2*	Rational problem solving	*4*
Doctors too scared to tell each other they are wrong	*2*	Rejection of the 4-Hour Rule	*4*
I'm going to worry someone will die	*1*	Seniority and expertise	*4*
Everything is urgent and causes interruptions affecting cognitive performance	*2*	Sense of control	*4*
Importance of communication	*4*	Sense of safety	*4*
Linking safety and productivity	*4*	Trust	*4*
My job is to make sure patients are safe	3		

Figure 4.2: Inductive Node Themes

Direct text references from each of the interview transcripts were traced to the relevant content node. There was a wide range in the total number of references from each participant: Participant 1 had 312 references covering 44 nodes; Participant 2 had 197 references covering 39 nodes; Participant 3 had 163 references covering 36 nodes; and Participant 4 had 226 references covering 41 nodes. For three of the participants the total number of references varied but they covered a similar number of thematic nodes. Only Participant 3 had both the lowest number of total references (163) for the lowest number of thematic nodes (36, compared with an average of 44 in the other three interviews).

This was associated with a qualitatively different interview in which Participant 3 explained anecdotal contexts in quite a bit more detail than other participants. Participant 1 and Participant 4 had qualitatively similar interviews in which they spoke very quickly

and covered a lot of different ground in their responses to many of the semi-structured questions, perhaps accounting for slightly higher nodal numbers and total number of references.

The *a priori* nodes were grouped into the three question categories used to organise the interviews, and were coded as 'Question 1' (Patient-Doctor Relationship), 'Question 2' (Clinical Performance), and 'Question 3' (Productivity) (see Figure 4.1). An analysis was undertaken to describe the coverage of each nodal grouping across the four interview texts, and the number of reference quotes coded to each node within a nodal grouping. This analysis revealed the following:

- 'Question 1' (Patient-Doctor Relationship) nodal group had 42 references across the four interviews with a range of coverage of the total text volume between 24% and 45%, and average coverage of 35%.
- 'Question 2' (Clinical Performance) nodal group had 52 references across the four interviews with a range of coverage of the text between 36% and 54%, and average coverage of 44%.
- Question 3 (Productivity) nodal group had 54 references across the four interviews with a range of coverage of the text between 29% and 35%, and average coverage of 33%.

In addition to nodal groups, individual nodes were assessed for the frequency of references coding to each node. Analysis shows:

- Reference frequencies ranged from one reference across all four interviews for a single node through to 58 references across all four interviews for a single node.

- The majority of nodes (35 of 47 nodes) were referenced at least once in all four interviews, with a further 10 referenced in two or three interviews. Only two nodes were coded to a single interview.

These reference frequencies are consistent with the general philosophy of the identification of units of meaning in empirical research. Not only is frequency of reference an indicator of the value of the unit of meaning, but a single expression may also convey such depth and strength of meaning that it constitutes an important unit of meaning in its own right.

There were only two *a priori* nodes from the three question groupings that were incompletely covered across the four interviews — 'Patient-Doctor Relationship Fit in the Health System' (Question 1 grouping), and 'Awareness of the 4-Hour Rule' (Question 3 grouping) (see Appendix 8 for the full list of questions). Transcripts showed that either one or both of these questions were not explicitly covered in Interview 1, Interview 2 and Interview 4.

Overall, this analysis suggests that each participant remained focused on the themes of the semi-structured interviews and provided a substantial amount of detail within question groupings, and that there was a tendency for more extensive coverage of the Question 2 grouping related to clinical performance, but that by and large a relatively equal proportion of time-content was provided by each participant to each question grouping. These findings are consistent with my subjective experience within the interviews.

A second analysis was done, this time cross-tabulating the individual references for each thematic node, against the participants' demographic attributes. Attributes were assigned to each of the participants (sex, level of professional attainment and medical discipline). Participants were predominantly female, but equally split between trainees versus consultants, and emergency versus non-emergency specialists (Figure 4.3).

Assigned Attributes of Participants				
Participant	**1**	**2**	**3**	**4**
Attribute				
Gender	*Female*	*Female*	*Female*	*Male*
Professional Level	*Consultant*	*Trainee*	*Consultant*	*Trainee*
Emergency Specialist	*Yes*	*Yes*	*No*	*No*

Figure 4.3: Participant Attributes

A Participant-Nodal Group matrix was created, shown in Figure 4.4. The figure shows that, for example, Participant 1 and Participant 2 shared a total of 44 nodes coded across their combined interviews. Of these 44 nodes, 82% (36 nodes) coded to both Participant 1 and Participant 2. Of the six possible combinations of Participant-Participant comparisons, two comparisons significantly differed from the average for the total proportion of shared nodal representation.

Participant 1-Participant 3 had a lower convergence (77% versus the average 84%), and Participant 1-Participant 4 with higher convergence (91% versus the average 84%). Participant 1 and Participant 3 are both female and consultant physicians, but differ in area of medical discipline: Participant 1 is an emergency physician, and Participant 3 is a non-emergency physician. Participant 4 is male, a trainee doctor, and a non-emergency physician trainee. These data suggest that there is no particular indication that sex, level of training, or medical speciality affected the units of meaning found in each participant's responses to the questions within the interview structure. As mentioned above, qualitatively the interview with Participant 3 was the 'outlier' in that it provided detailed anecdote descriptions. These data also suggest that with an average shared nodal group representation of 83%, there was a marked level of convergence between the meaning units expressed by participants across all four interviews.

Participant-Node Comparisons						
Participant	1		2		3	
	Combined Total Nodes (n)	Proportion Shared (%)	Combined Total Nodes (n)	Proportion Shared (%)	Combined Total Nodes (n)	Proportion Shared (%)
1	*NA*	*NA*				
2	*44*	*82%*	*NA*	*NA*		
3	*44*	*77%*	*39*	*88%*	*NA*	*NA*
4	*43*	*91%*	*42*	*82%*	*41*	*84%*

Figure 4.4: Participant-Node Group Comparison

Analysis of the higher and lower convergence comparisons yielded a heterogeneous collection of nodal reference variations, with no evidence of any particular theme or question contributing to either a stronger or weaker convergence of nodal references. Rather, with an average of 84% shared nodal representation across all participant comparisons, there is significant homogeneity across all four interviews, suggesting the content from all four interviews is convergent with the interview themes. This level of convergence over a relatively small number of interviews is consistent with research by Guest, Bunce and Johnson on data saturation from in-depth interviews where the majority of nodes (73%) are coded within the first six interviews.[455]

[455] G Guest, A Bunce and L Johnson, "How Many Interviews is Enough? An Experiment with Data Saturation and Variability", *Field Methods* 18 (2006): 66.

Of the 19 inductive nodes, ten were linked to direct references from all four interviews, with a further eight linked to two or three interviews, and only one node arose from just one interview — shown in Figure 4.2. This suggests further evidence for the relatively homogeneity of content across the four interviews, and supports a conclusion of significant saturation across the four interviews.

4.3.3 The Phenomenological epoché and reduction results

A state of epoché informed the descriptive phenomenological stage of analysis, characterised as a detached immersion in wonder. Bracketing of the encounter with the interview data and nodal identification from my professional, personal and goal-directed research activities allowed for a distilling of the First Order Constructs from the meaning units of each interview and the interviews as a whole, as per the empirical phenomenological methods of Aspers.[456] These processes began from the first interview, and progressed non-linearly across two years, intensifying during a formal analytic phase in the last 12 months of writing.

Bracketing the inductive meaning units (identification of nodes) was a difficult process. During the data analysis many factors would provoke identification of potential meaning units, including the emerging frequency of descriptions across interviews; the salience of the concept coding to an *a priori* node in the context in which it was presented in the interview; the emotional valence apparent at the time of its expression; the strength of associations created in my internal experience as researcher in the context of explicit and implicit expectations and understandings from past research and experience; and the strength of the dynamic interactions between the participant and myself in the moment.

The dynamic interaction was of particular importance given the multiple layers of identification possible between myself and the participants. At once I could be researcher, colleague, or external locus of professional criticism. These dynamics are unavoidable consequences of my professional identity. The potential effects of these different facets were partially overcome or ameliorated through the supervision process during my research, in which my interview technique was reviewed regularly to ensure it managed a balance between authenticity of my professional identity and an attitude of naïve curiosity.

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[456] Aspers, "Empirical Phenomenology", 5.

Bracketing required many encounters with the transcripts over months. Each transcript was approached at the time of transcription in epoché, and on at least three additional reviews, again as if for the first time. To achieve as close to a naïve encounter as possible with the texts, the review process was spread over three months. Within epoché I avoided consciously making associations or annotations. When bracketing appeared to fail — for example, when a possible unit of meaning presented in association with one of the mental characteristics such as the dynamic identifications mentioned above — the meaning unit was noted without additional reflection. Some days or weeks later the potential meaning unit would be re-encountered within the transcripts. Many times the meaning unit persisted, but at other times it continued to appear as a construct of my own mentalising and so was discarded.

Themes and associations could also arise unexpectedly and haphazardly over the several months of review, often when waking from sleep or engaged in some other mundane exercise of working life. The objects of wonder included the nature of givenness and meaning-making; the object of the 4-Hour Rule as a distinct entity flowing in space and time; the lived experience as expressed by the medical practitioners; the manifested sensorial quality of bracketing and being in an open mind turned to the world of medical practice, its ethics and its power; and the objectives and duties of creating new ways of knowing for the purposes of the successful completion of a doctorate. On several occasions I would be in conversation with family or friends, or watching a movie or listening to music, and as if by surprise a recollection of a moment from an interview would spring forth.

Moments from the epoché were recorded in a direct fashion into the NVivo software environment. Within the first two months of assessment, 33 themes and associations emerged as candidates for First Order Constructs. After about three months, I brought these memos and annotations together and sat quietly in contemplation with them for several more weeks. What emerged from these reflections were the First Order Constructs of the empirical phenomenological process: Constructs of the meaning units of the participants' interviews as they emerged faithfully from each interview, with those meanings resonating across the entire textual space of the interviews. I initially coded the Constructs verbatim into the software architecture and then began another review of the interviews, pulling out reference quotes from across the interview data and assessing how well the meaning units resonated with the verbatim content of the interviews. In the end,

from 47 descriptive meaning units and 33 themes and associations, a total of nine First Order Constructs was resolved. These are explored in detail below.

During the entire period of the fieldwork, analysis and writing, I was engaged in weekly and sometimes twice-weekly dynamic psychotherapy, which provided an additional layer of critical reflection on, and bracketing of, the natural attitude of both myself as researcher and my encounters with the participants in their lifeworld of clinical encounter. Therapy promoted conscious awareness for observation and correction of projective and other defensive strategies of the mundane ego that may have interfered with the authentic encounter and representation of the lifeworld descriptions of participants and their intersubjective resonances.

4.4 The First Order Constructs

With respect to the research question, the 4-Hour Rule has overwhelmingly, and in many facets of working life, had direct and indirect effects on doctors' perceptions of their clinical encounters, their working environment, their relationship with colleagues and other staff, and their perceptions and views of productivity within public hospitals more broadly.

The style in which responses to interview questions were framed tended to refer frequently to the 4-Hour Rule in the context of the different dimensions of the questions asked. This reflects that all four participants had agreed to participate in the research because of their interest in the research question focussing on administrative interventions in hospitals and the impact on patient-doctor relationships.

Notwithstanding this, the responses across the three domains of questioning were rich and varied, and expressed points of both convergence and divergence in views and perceptions about the role of a doctor, the phenomenon of the clinical encounter and strategies used by doctors to negotiate the oftentimes-fraught environment of the busy public hospital Emergency Department.

Nine clear elements arose out of the individual and collective data of the participant interviews. Each of the nine First Order Constructs is described in detail, but they are summarised here:

1. Doctors described their working life with patients as a series of 'cases' who more or less fitted pre-determined patterns and whose relative representativeness of their

inherent 'caseness' framed how the doctor internalised their representativeness or uniqueness.

2. Doctors identified that their personal performance strongly influenced productivity. From the industrial perspective, though no single person described a comprehensive model, all combined to give a relatively good understanding of inputs and outputs, and the transformations of one to the other; efficiency; effectiveness; and monitoring and feedback.

3. Doctors indicated that the 4-Hour Rule had led to changes changes in the Emergency Department as a unit with respect to its place in professional development. They said the department was no longer a place of training for young and inexperienced doctors under the direct and intensive supervision of experienced physicians.

4. Doctors used a range of strategies to manage the pressures brought to bear by the 4-Hour Rule on workloads.

5. Doctors identified that the 4-Hour Rule had resulted in an urgent need for senior-led medical responses to a range of issues.

6. Doctors viewed safety as a core concept of medical activity between doctors and their patients, generally achieved through effective communicative exchanges with patients and colleagues.

7. Doctors adhered to strong hierarchical norms that revolve around their local working colleagues, with less regard for institutional professional associations or state authorities.

8. Doctors identified trust as an essential condition of the clinical encounter at the interpersonal level because it creates the necessary conditions within which to act.

9. Doctors identified having a sense of control over the working environment as a strong influence on performance and productivity.

The purpose of the First Order Constructs is to demonstrate meaning arising from the descriptive data of the participant interviews. I have detailed the individual and collective data that underpins each of the nine Constructs. This also satisfies the third principle of

Morse's framework for qualitative research: to properly demonstrate the evidence upon which its inferences are based.

Participant quotes are presented in italics as direct verbatim quotations from the interview transcripts. Each Construct begins with an 'iconic statement', a statement from the interview data that represents the units of meaning that were the primary source for, or strongly speak in support of, the Construct. Short editorialising statements are interspersed throughout the participant quotations to assist with making sense of how each First Order Construct fits within the richer context of units of meaning that broadly relate to the 'web of ideas' that the Construct totalises. These editorial statements also provide some link between participant quotes and the context of the line of inquiry within which they were elicited during the interview.

4.4.1 Evidence for First Order Construct 1: Defining and verifying caseness

Iconic Statement: *So that's, again, a game of cat and mouse* (Participant 1)

Each doctor spoke explicitly about a rich communicative exchange with a patient as the grounding within which the whole clinical encounter unfolded — this exchange was far from being a transactional process. Most described in detail how uncertainty filled the initial encounter, and strategies adopted to try to resolve this quickly, for the benefit of both doctor and patient. As Participant 1 described:

The first thing that happens between me and the patient is we size each other up. And, um, we work out how we are going to communicate. I know that that is a deliberate step for me interacting with the patients. It is not something that happens by chance. If I meet a patient I'm working out in the first couple of seconds 'what kind of doctor do you want me to be?'; what communication style will I adopt to get the information quickly and efficiently from you and for you to trust me, to build rapport really quickly.

Doctors noted that the uncertainty of the immediate clinical context, framed in terms of level of severity, also informed the agenda setting on both sides:

…in the Emergency Department I guess you walk in and introduce yourself and, I guess that um, you know, it could either be that they are actively trying to die in front of you or it's something less emergent and that, you know, will basically set the scene of why they're there today and what they're wanting to achieve out of their consult, um, with the department, or with us — and my goal...(Participant 2)

The idea that a patient brought an agenda to the encounter beyond the immediacy of signs and symptoms of illness was a feature of all participants' reflections on what happened in the clinical encounter:

I will encourage them to talk about the hidden agenda…. in most patient-doctor interactions there is an explicit agenda, and there is a hidden agenda... So part of the challenge of my job is building enough rapport quickly enough that I not only get the explicit agenda but the hidden agenda. (Participant 1)

Um, I think good communication is fundamental to anything. Being respectful of the patient whether or not you actually like them. We all get those patients, you know, that we probably don't particularly like. Particularly the frequent flyers in ED that, um, you know have a lot of behavioural issues. But you know, being respectful of the fact that for whatever reason they're here in our department and we have to help them, um, is probably really important. (Participant 2)

Um, most of the people I see have got a medical illness and also mental health problems, and I hope what occurs is a respectful interchange and, um, a lot of them, a lot of the people I see are frightened about whatever is wrong with them. I see people who are either heading for a heart-lung transplant or, um, who are engaged in some deliberate self-harm, or cancer, or that sort of thing. So they are often quite frightened. (Participant 3)

Well you're talking to them, they're hearing or not hearing you and vice versa you're hearing or not hearing them. Um, and that's just gonna depend on the way that someone has presented. How distressed they are, whatever else is going on for them, what they may not want to talk about. Um, just trying to get an overview of all those factors. (Participant 4)

In the end, a significant outcome of the communicative exchange was to arrive at a point where something would get done. In order for this to be achieved, the doctors recognised that a key purpose of the exchange of information was to define the case before them. They did this by interpreting the signs and symptoms presented by each patient, and mapping out a course of action towards diagnosis and treatment that involved additional information-gathering, such as interviews with extended family, radiology and pathology, or other specialist review. They identified a place that needed to be arrived at:

I work out what sort of questions I want to ask them, they give me some answers and then we nuance that until we get to a point where we feel we have enough information where we start doing things. I think something that is a bit different in the ED environment compared with other clinical environments is that

I am already thinking 'how am I going to assess you and manage you early in the history-taking process?' I'm already thinking about the diagnostic tests I want to order, initial management I might start. (Participant 1)

… if someone keeps coming back to emergency say over and over again, then don't just keep sending them away. At some point you've got to get them and try and work out what really is going on. (Participant 3)

This concept of 'what really is going on' was used in the context of diagnosing the patient, and it was a common theme. None of the participants engendered a diagnostic formulation as a categorical all-or-nothing event. Born of the uncertainty of the initial encounter and the models of working through the clinical problem, the doctors implied that diagnosis and management were usually qualified along a continuum. In medical ontology this can be termed 'caseness'. Although caseness has a traditional use in psychiatry and epidemiology, it is more generally useful as both a categorical concept and an expression of a continuum of symptomatology, usually along an axis of severity, applying to individuals and groups.[457] [458] [459] [460]

As a result of the initial exploratory nature of the encounters described by the doctors, the working model of hypothesis test-retest of the 'caseness' for a diagnosis and management required iteration across the course of the encounter:

Are these medications worth it? Have we missed something? How does this person understand what's going on? How do we understand what's going on? (Participant 3)

And the other thing I do as a constant process of clinical assessment and reassessment around management. So for example I might start some fluids and come back do vital signs, re-examine the patient. Do constant re-examination and reassessment and management and that's part of the way I do things… (Participant 1)

Caseness has a bipolar potential; it may act positively or negatively with respect to the doctor's behaviour. It is one of the ways in which individual patients can change the

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[457] H Burger and J Neeleman, "A Glossary on Psychiatric Epidemiology", *J Epidemiol Community Health* 61, no. 3 (2007): 185–189.

[458] C Main, ed., *Clinical Psychology and Medicine: A Behavioral Perspective* (New York: Plenum Press, 1982), 122.

[459] See Definition 6 at https://www.merriam-webster.com/dictionary/case .

[460] Committee on the Diagnostic Criteria for Myalgic Encephalomyelitis/Chronic Fatigue Syndrome, *Beyond Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Redefining an Illness* (Washington: National Academies Press, 2015).

behaviour of the doctors, both in the present and into the future. In its most extreme forms, misattribution of caseness can have dramatic consequences:

It could have been me. I don't X-ray every single vomiting child. You know we're all fully aware of it. And that person's living with that for the rest of their lives that they missed that [and the child died]. (Participant 1)

Um [indecipherable 3 seconds] all patients who come in with back pain will get inflammatory markers because one consultant has had three epidural abscesses within like a few years. So that has completely changed the way they approach back pain. A lot of other departments will say 'No, if you think it's musculoskeletal that's fine', but at this place you're basically not allowed, even if you think it's musculoskeletal you've gotta run inflammatory markers because of those three bad cases which I think you're just incredibly unlucky to get three of those into one ED. (Participant 2)

I guess because of the department I'm in we see some horrific things and we get things going very bad, very bad quickly, and I think whenever you have one of those cases, whether it's your case or one of your colleagues where you've been a part of that I think it does actually acutely change the way that you practise. Um, in a sense that you go, okay so what are we missing or you know what did we get last week, so you know for the next two weeks, three weeks, every patient that comes in with even a hint of a similar thing you are going above and beyond and you're probably investing and ordering because of that one thing. (Participant 2)

Participant 2 elaborated on the sentiment, shared by the other doctors, that valuable information in relation to caseness also came from peers:

Because it's not just about me as an individual but it's also I guess in a peer review sense if I can see, you know, in reviewing somebody else's case and hearing about it, I will think okay well that's something to take away from that, and it's a better way to approach that next time, it's something to consider the next time I see a patient in that situation. You know it becomes part of that pattern recognition I guess. You can take that to the next patient.

Interestingly, the vulnerability of the doctor's estimation and measurement of caseness was not described in terms of the validity or reliability of diagnostic criteria or investigations, but as a function of the uncertainty or the quality of their communicative exchange, training and professional development, or as a function of bad luck. All four participants identified their supervisors during their training years as having a direct

impact on their ability to conduct effective interviews and formulate diagnosis and management, which formed the foundation of their ability to define a case.

4.4.2 Evidence for First Order Construct 2: Personal performance affects productivity

Iconic Statement: *You know, in terms of productivity you need to make sure that patients are seen appropriately, the resources are used appropriately, and that we minimise any poor outcomes in terms of morbidity and mortality. Um, I don't think measuring how many patients we get home is necessarily a good marker of productivity because, you know, they may well come back again the next day because things have changed or when they should have been admitted potentially in the first place.* (Participant 2)

Productivity, defined in an industrial sense at the organisational level as the efficiency with which inputs are converted to outputs, was not a feature of the doctors' views on productivity in the hospital. There was tacit acknowledgment that numbers got counted, but there was a variety of views on the relevance of this to productivity. Participant 3 expressed a jaundiced view, *"the whole idea of using as yardsticks waiting times to operations and waiting times to emergencies is just stupid"*. This was balanced against the views of Participant 1, a consultant emergency physician, who believed that there was a *"magical number"* of between 80 and 110 patients on a shift that she could manage competently with the help of her junior staff and nursing teams:

… across my area we have regular meetings of the directors and we talk about it. And we think in a shift, it's roughly a day, I don't know, all of us have a magic number of where the day, of how many patients in the day where the wheels fall off. I think I could handle about 110 patients in a day. You know, I can actively know what's going on with most of them and not feel like... that's where my staffing levels and my geography, and geography really plays into this. You can't see all corners of the department you might as well give up before you start. Um, it's different in different places so a pokier — this is a well-organised layout. A pokier layout where you have to actually physically go and step in and say hello to everyone, you can only manage about 80. You know, so it's it's interesting that notion of where do the wheels fall off? But definitely the wheels fall off earlier if you're tired, hungry, anxious about something, feeling like you can't trust someone else on a shift. It's an irony as well, we don't get to choose who is on the team. (Participant 1)

Whether or not discrete numbers were valuable in terms of hospital productivity, all participants shared a view that their personal role in the process was important and affected by their personal circumstances, the physical circumstances of the unit and the nature of the patient's situation:

… if this place gets busy the triage nurse starts ordering bloods off everyone because, you know what, the triage nurse doesn't order bloods like I do. The triage nurse just orders everything on the panel. And then when that troponin comes back positive even when it wasn't indicated in the first place we have to do something about it. Talk to cardiology and run a stress test. (Participant 1)

…but the irony is you know that as the department gets more and more full, you can't you know actually getting people out of there would help you. But if you get them out to somewhere you don't feel is safe or they're not fully worked up, you're just going to worry about them anyway. You're not actually reducing your cognitive load… the baggage. (Participant 1)

On the flip side I can see a kid who's bumped his head for 10 minutes and reassure the parents and you know I've got them home within 4 hours, but the point is that they're safe to go. So I don't, yeah, I've never measured time. I don't think it's a sign you're a better doctor. (Participant 2)

And if you are coming to work stressed because there is already you know, relationship issues at home or kids issues or you know, financial, whatever, and that's obviously going to add to your stress, um, to start with. And not, you know, potentially cloud your judgment and not make you as productive as you could be. (Participant 2)

… it's very much driven by the Emergency Department. Ah, the problem I see with that is that it chases its own tail and more things become emergencies, and the more money you put into emergency the things become emergencies. And no-one stands back to look at what else is going on. (Participant 3)

We've got all these people there, they're trying to get them all out in four hours and a lot of them shouldn't be there in the first place, a lot of them live a long way away and they come into the city for their reason, so you don't have much information about them. (Participant 4)

The doctors overwhelmingly valued the quality of the health-care provided over a concern for discrete numbers. This is consistent with their broader views of productivity, and the quality dimension was identified as one of the fundamental drivers of productivity from the doctors' perspective. 'Cognitive overload' was a term used by Participant 1 to describe the general view that competing demands and administrative pressures imperilled those quality outcomes.

And also I think that human brains can only cope with a certain amount of stuff at once. Even good human brains which are trained to do lots of stuff at once. So I think that stuff falls off the list. So if you are under stress and you are in survival mode, which in ED survival mode you get highly [focused]. When you're ED physicians and ED doctors in survival mode [they] pull back to focus on the patient in

front of them and they lose situational awareness about the rest of the staff. Because that's the way you cope, 'I mustn't fuck up the patient in front of me now'. And if that means I'm snappy in my communications, and I don't know who needs to go the ward next, or I haven't allocated a meal break to the interns, that doesn't matter. I'm just making sure that this person's not dying. (Participant 1)

The test of reasonableness? So in [the nurse manager's] case, even when he could see you were in with the patient, you were talking to them, writing or doing something, 'Why isn't it done?' That's not reasonable. Now if I've gone off to have a cup of tea and have my lunch da da de da, that's not reasonable, and maybe the patient should be moved or discharged or whatever. But if you're physically working with somebody, it is unreasonable to say, 'Why haven't you finished yet?' (Participant 4)

Well, pressure. Clearly the time of day and what's going on and how busy you are. And pressure to get things done before you've had time to really think about it. So a relentless flow of people you're seeing obviously. Um, lack of support. Things like not having had any dinner [laughs], being tired and all that sort of stuff. Obviously lack of knowledge, lack of experience. (Participant 3)

Given that quality outcomes were perceived as a significant driver and motivator, both at the personal level and from a productivity perspective, how quality was measured and assessed was an interesting question for the participants. Collectively, there are systems and processes in the hospital structure to support reflection on outcomes at the individual physician and departmental levels. Participants described weekly 'morbidity and mortality meetings', where difficult cases, near misses, and adverse outcomes were discussed collegiately. This informed individual clinical practice in quite potent ways at times, as Participant 2 described:

I think whenever you have one of those cases, whether it's your case or one of your colleagues'… I think it does actually acutely change the way that you practise. Um, in a sense that you go, 'Okay, so what are we missing?' or you know, 'what did we get last week?', so you know, for the next two weeks, three weeks, every patient that comes in with even a hint of a similar thing you are going above and beyond and you're probably investing and ordering because of that one thing.

You've got your personal reflection, um, and you know, particularly when a case goes bad you kind of obsess about it, ruminate over it, and but then I think that's also where I think particularly the big cases and that sort of the case reviews and the M&Ms [morbidity and mortality meetings] are, have actually, and sort of those audits on um, you know, bad outcomes or poor outcomes, um, that feedback to the department is really important. Because it's not just about me as an individual but it's also I guess in a

peer review sense if I can see you know, in reviewing somebody else's case and hearing about it I will think okay well that's something to take away from that and it's a better way to approach the next time.

So, if you're asking me to try and get a balance between how efficiently and how well patients do, I think I'm doing okay there. And do I compare myself to my peers? Probably. Um, do the nurses tell us? Yes. You know, do I think that's appropriate? No. (Participant 4)

One participant was particularly grateful for a specialised support structure called 'supervision', typically reserved for people working in mental health fields:

I think that at least when you have these things happen, you have in supervision, time to actually say, 'I don't understand how this works'. 'Why on Earth would that patient do that or why would I do that, or why did this go badly?' Whereas in other fields, well it's actually quite shocking when you think about all these young people dying [in oncology], and I really liked the job, but you didn't have anything like supervision. I didn't even know what that was. And then jumping ship to [mental health] I was like blown away.[461]

There was a generally held belief that there are boundaries regarding who can, and who ought not, provide feedback to colleagues on their performance quality. It was generally believed that, especially in the setting of questionable quality outcomes, deference and respect needed to be shown from junior towards senior medical staff. There was no place for juniors to be providing clinical feedback to senior colleagues *"because it's not appropriate for a junior staff member to be counselling a senior colleague about a poor performance. Because you're not measured, you shouldn't be measured compared to a registrar, you should be measured compared to your other colleagues".* (Participant 2)

In relation to quality feedback from other disciplines, opinion was mixed. One participant highlighted having had several episodes of '360 degree' feedback, where staff from different disciplines including nursing and administration provided specific performance feedback. As noted earlier, Participant 4 was circumspect about performance feedback from some nursing staff because they felt it was filled with ulterior motives. This was in contrast to Participant 1, who said, *"I ask the nurses. The nurses are the eyes and ears of this department and they know who's doing what so I ask them".*

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[461] This comment is de-identified as there are specific details in the response that may inadvertently identity the participant.

Despite identifying that feedback and reflection on performance were essential to their working lives, Participant 2 said, *"I think quite often in medicine we are too scared to tell each other that we're doing a bad job"*, a sentiment echoed in a comment by Participant 1, *"I don't think medicine, I don't think the organisational structures in medicine do ourselves any favours. I think, um, traditionally doctors have been very, very averse to any external influence on the way we do business"*. Both comments indicate that hierarchical structures, referred to across all the interviews, function in relationship to underlying currents of uncertainty and power.

There was consensus that the 4-Hour Rule operated as a productivity measure in the systems of all the hospitals where the doctors worked. Most shared views on their experience with the rule and its effect on their productivity, and highlighted how other professionals in the Emergency Department interacted with them as a function of the rule:

I think it can be just cognitively that if you're in charge of the ED you have to maintain situational awareness and it's easy, for me it was relatively easy to add time-based targets into my degree of situational awareness I had over the department anyway. Except, when it gets really, really busy, I let the nurse navigator run that and I go and do the clinical work. So it's something I drop off the radar if I'm not coping. (Participant 1)

Obviously my performance with my managers absolutely depends on [the target]. I get reminded about it by the senior nursing team every single minute of every single day! Um, the challenge for me is making it work for me, not making it work for them. (Participant 1)

And I think particularly that the NUMs [nurse unit managers] are more aware of it. Um, as I said, you know obviously if I've got a sick patient I don't really give a… care about exactly or if their disposition is going to be determined by an imaging that's not going to happen in 2 or 3 hours. That doesn't change what I am going to do. But certainly you get nurses that are breathing down your neck. (Participant 2)

Participant 3 was particularly concerned about the relationship dynamics between professionals around the 4-Hour Rule and gave a lengthy example, summarised here:

And I actually had a thing. A couple of months ago. Now I'm pretty senior as a reg, so I'm pretty able to stand my ground. We had a patient, a young person first ever presentation to psychiatric services ever, came into ED… so I say first presentation, my God if you can't do it well then we're in trouble. And, [we] talked for a good, at least an hour. I said 'look, that's lots of information, I really like to go and

talk to someone who knows you'... basically what [happened], one of the bed managers and then one of the consultants, who is the ED consultant… basically said, 'What's happening with the patient, what's the story?' I said, 'I don't know yet, we still haven't talked to family, we still have no background', um, and actually hopefully we get this person home to avoid them being admitted but we needed all the rest. And I was basically told 'You need to make the decision, you need to make the decision now, you've had an hour with them'. And I was like 'Fuck you', right.

A tense stand-off resulted, with the emergency consultant and the nurse manager both increasingly agitated that Participant 3 would not decide on an admission or a discharge. Participant 3's main concern was that an admission for the young patient could result in psychological harm, when instead they might be able to be managed safely at home — the patient's wish.

This doctor expressed a view that if they had been a more junior doctor, they would have struggled to 'stand [their] ground', which strongly indicates a set of power dynamics at play. This is consistent with all the participants' views that monitoring of the 4-Hour Rule played into a strongly loaded power dynamic within the departments, and often involved interdisciplinary relations that could be quite negative.

All four participants expressed views about the general productivity of the hospital as an institution, both in relation to patient-doctor encounters and the general operations of the hospitals and wider community. The two consultants tended to frame these in the context of systems-level issues:

[S]o… the productivity is around how happy people are and the levels of trust in the organisation, can be the biggest impact on how productive somewhere is. (Participant 1)

I think realistically clinical performance does need to involve how you interact with the broader system. I think you need to be aware of, you know, resourcing limitations. You need to be aware of the broader context of things. You know for example, you can't practise in emergency medicine unless you are aware of what pandemics are going on out there or which big vaccines are short or there's no gentamicin in the whole of Australia this week. You need to know some of that stuff too. So clinical performance is much broader than the patient-doctor relationship. It's also how you interact with your colleagues and I think that gets forgotten. So, so for example it is unsafe if one of my registrars sees a patient and the gastroenterologist is going to bite their head off for calling them, that's unsafe. You know I think people forget that. Clinical performance is all of it. Your patient-doctor interaction, how well you assess someone,

using good evidence-based management, um, interacting with your colleagues well, appropriate referrals, um, awareness of the broader context in which you're practising. (Participant 1)

We started doing some consults when [the treating team] thought there was a history of depression or self-harm and could they manage the process. And then I realised over time the same kind of things were coming up for different groups of people. So I put it to them that we write a booklet together called Dealing with [Your Medical Condition] for the patients, which we have done, and they paid for, and we give to them all now which goes through the [medical] journey. So we involved the team in that. And I'm trying there and elsewhere to help the patients be more empowered. (Participant 3)

For the junior medical doctors, their views of hospital productivity were expressed in more immediate terms:

Apparently that would be the NSW government [who controls productivity] [laughs]. But even within that, we have certain targets that are set and we still have to abide by those as much as we can. Um, but the other things of productivity are still set by our own department and management team in terms of the practice, and making sure we adhere to best practice as often as we can. Um, recently one of the consultants has introduced a kind of like a best practice ordering guideline. And apparently our, in terms of our productivity, our, um, we used $80,000 worth of less pathology ordering than this time last year. So, that's probably a good thing, because we can't just order every single test for every single patient. We do have to share the resources amongst everybody. It's not a limitless pool that we can go to. (Participant 2)

And we don't get taught the management side of things so a lot of us don't know how the medical system works. We don't, and that probably impacts on how we talk to patients as well because we don't understand the, or how things interlink or interplay or the costs of things. (Participant 2)

Like that idea that this, you were meant to process all these patients within four hours it's just bullshit. Like if you even take a patient's journey, they come in, the ambulance is there. They have to hit triage, they're going to get triaged. Even in the smoothest system, that's going to be a 20-minute process. They're going to see the ED doc, right, that's another 20-minute process. Then they might have to have bloods taken, they might have to have whatever taken, and then everything is meant to be done, if they need a specialist input, after four hours. Even in physician-land, which I did, that is bloody hard. And that's the perfect trajectory. All the tests coming back, on time, the patient seamlessly going through each of these stages. No bed block. No trolley offloading problems, no no cubicle, no nowhere to examine the patient, no you know, all of these things, and you're still meant to do it all in four hours. And when it comes to [my discipline] it's crazy. (Participant 4)

Some of the doctors specifically addressed ethical and moral dimensions that impacted on their views on productivity within the hospital and the health system more generally. Participant 3 was particularly vocal about a range of issues in their work practices that involved heavy ethical debates, summarised in one of several cases they used:

I weigh up the ethics of things. I think you do need to weigh up cost. I was in Grand Rounds the other day and they were talking about this lady who has a rare syndrome whose drugs cost $500,000 a year to the public. You can't have everyone doing that. And I think you do have to think a bit about, um, the value. And I know a lot of the time that if people are very, very angry and isolated and miserable and have nothing going on in their lives and they don't seem to have any way out of that, I would have to say that I don't think I try quite so hard as someone who is contributing and has a young family and whatever. Um, now that again might seem a bit mean but you do meet people and you think, why are they doing this and they're destroying their own lives. I find that the most painful thing actually. To watch people doing that. But then to give them some treatment that if their life is improved it's spent doing all that, well… [laughs]

So, herein described by the doctors are a range of structural, process and ethical quality and productivity issues that impact them, their encounters with patients, and their interactions with colleagues and with other disciplines in and around the Emergency Department, and that are materially impacted by the administrative intervention of the 4-Hour Rule. What was lacking in any individual description was a sense of the 'whole' of productivity across an Emergency Department, in its place in a hospital, and those institutional, community, political and interpersonal factors that might have an impact. This knowledge was shown to be distributed across all four participants, but not articulated by any one of them alone.

The participants did perceive, however, a direct correlation between their personal performance and the metrics of productivity in the workplace, mediated ostensibly by features of quality in respect of the 'outputs' of patients' dispositions and care.

4.4.3 Evidence for First Order Construct 3: Changing workspace of professional development

Iconic Statement: *You just can't, you know, ascitic tap, pleural drain, lumbar puncture in the ED is getting hard to do without constant awareness you're gonna get hen-pecked because that's the way it happens to move that patient on and get out of the department the whole way through.* (Participant 1)

Most of the doctors expressed quite emotional views about the changing role of Emergency Departments in public hospitals following the introduction of the 4-Hour Rule, an unexpected view and an impact little explored in the current medical literature related to the NEAT.[462] The department was identified as "*the safest place*'" (Participant 1) in the hospital for a range of procedures and activities that would no longer be performed there because of the pressures of the 4-Hour Rule. According to the participants, this affected both consultants and trainees as they tried to acquire and maintain the important skills necessary for professional performance.

Furthermore, the clinical pressures of large volumes of patients and time pressures were reported to have had a deleterious effect on the opportunities for training and learning in the department. Said Participant 1,

… you can't process someone in four hours with the old model of ED intern goes to see the patient, ED intern attempts chest drain by themselves at the back of cubes, ED intern fucks up said chest drain and the patient is moved into resus and 2 hours later someone gets around to it.

Yeah [the 4-Hour Rule] has. It really has. Um, and where unfortunately it has the most impact is on the teaching and training side of the patient-doctor relationship. So it makes it very hard to take time to particularly teach procedures properly. So procedures are one of the reasons I really like emergency medicine, and they're a bit of a thing they're moving out of our field. You just can't, you know, ascitic tap, pleural drain, lumbar puncture in the ED is getting hard to do without constant awareness you're gonna get hen-pecked.

In addition to changes in training opportunities, doctors were concerned that there were pressures to foreclose on comprehensive assessments and management that, in days gone by, would have been conducted in the department for the ultimate benefit, in their eyes, of the patient:

Well it's standing back and having a look at it and saying hang on, does it all make sense, what else can we do. And this comes up a lot with people who are presenting to emergency and this is where the 4-Hour Rule comes into this too, because you need, you can't just… Actually another formative experience. I can remember this guy so well... and I said even back then we need to sit down with this guy and see what is going on and in fact he had a melancholic depression and he was psychotic and also had some bladder problem… he'd come back night after night with all these crazy complaints. And then somebody sat down with him and did a proper assessment and I think he probably had ECT anyway he recovered. That was

[462] Silk, "The National Emergency Access Target", 1.

actually a formative assessment that one. It was just, you know, there was no point just night after night, you know I'd say all those experiences if you'd add them up together in terms of time, it's actually probably more time-effective to sit down and work out what's going on. (Participant 3)

So that certainly impacts on that, you know, four hours as well, you know, change the way I probably do things as opposed to giving the patient a little bit of time to work out whether they really need to come into hospital. Because sometimes things are just, if they had that extra two hours, an extra bag of fluids, they're well enough to go home. But, you know, I think sometimes we do push admissions because we don't have that time, you know based on that KPI and things. (Participant 2)

So if you have two patients, three patients, the classic might be it's 8 o'clock on a Saturday morning and you arrive in and start your shift. There's one patient who was intoxicated from the night before, they've totally breached. The nurses don't care. It doesn't matter if they've breached. Whereas the newbie, who's just arrived in, we could actually get processed in four hours right. Now in terms of if you're thinking about genuine 'well who's the next patient to be seen?' well the person who was intoxicated at midnight might actually be due be seen because they're sober from 7, so they should be seen first. They're actually left to wait, in order for you to see the patient who's just walked in. But you go back to before the four hours ever happened, which actually treated and met with the patient who was next cos it would be fairer to them they might get home sooner. And they're seen first. (Participant 4)

Yeah and so the triage nurse thinks 'Oh, it looks uncomplicated to me but might need some bloods so I better whack in a cannula and do some bloods'. And then 'Oh, it looks close to the knee, they might need an X-ray, so I'll order the knee X-ray', and, um, and then, um, then they're gonna breach the 4-Hour Rule so we better put them in Short Stay Unit just to get the rest of the second half of their cephazolin. You know, that's it's created a whole bunch of stuff that was unnecessary. And the whole reason that that's all been necessary is because we [doctors] are not resourced to actually see everything at the first place. (Participant 1)

The pressures to complete adequate assessments and short-term interventions and treatments have resulted in the creation of additional 'short-stay units' within and around the department in which to admit patients. Most doctors expressed strong reservations about the true value of these units, and saw them operating as a means to reach targets rather than improving quality outcomes with patients. Some of the doctors worried that it had created inappropriate admissions for other departments:

Now they're looking for a [medical assessment] unit, where the patient will be admitted, pending an assessment. But we don't have [one] and that's why we're in trouble here… It's politics. It's absolutely retarded. (Participant 4)

Um, people are always being pushed to make decisions just to get, they'll say the person is at 3 hours and 35 minutes and you've got to make a decision to get them out before four hours. So people are sent away that I don't think should be. They're sent to wards just to get them out of ED, it's not clear what ward they should go to. So they end up in Neurosurgery when they should be in Orthopaedics, because they had to get them out in four hours and the tests haven't come back yet. So they're, it then takes longer in the wards because they've got to figure out and change what to do. I'm sure it takes more time up there because of all of that. (Participant 3)

I also have a spiel now that I tell the patients. Because patients when the clerk comes up and you say to the nurses 'let's admit them to the short stay unit' as opposed to, they get confused and they say, 'hang on why am I being admitted?'. So look I've changed the way I talk to patients about it. I say, 'look it's a completely political thing, I think you should still be able to go home but because these investigations are going to take longer than we previously planned, I'm going to admit you to our short stay unit then we'll follow up the results from there'. (Participant 2)

I think it's seen the growth of surgical decision units, that sort of stuff. I think when that stuff is done well it's great, I think when done badly it's appalling… So if you present to this department with abdominal pain, um, and you've got clinical signs, and it's obvious you are going to need a CT scan of your abdomen, which means you need a creatinine result, you need to do an hour's worth of oral contrast protocol once I know your creatinine result. Can I turn you round in four hours? No. So, I can't turn around any complex abdominal pain in four hours. Ever. (Participant 1)

These changing functions and dynamics of the Emergency Department in the structure of the hospital are reflected in a range of strategies that doctors have developed to address the new professional pressures of time-based targets and the relentless tide of patients flowing into the department.

4.4.4 Evidence for First Order Construct 4: 4-Hour Rule pressures

Iconic Statement: *I think that it has to be your driving force [the care of the individual patient]. So I think that in the midst of all the rest if you're not getting that bit right and that's not driving you then you can't go on. Because you're gonna feel compromised.* (Participant 1)

The impact of the 4-Hour Rule was manifold across the working lives of the participants. Not only did it impact on work volumes with patients, but it also affected how the doctors managed patient care in the context of their relationships in the Emergency Department teams. They often mentioned the time-based targets as an ever-present situational issue over which they had varying degrees of a sense of control. This was fundamentally the tension for the doctors: a sense of responsibility to their peers, their patients and the institution to do what they could to manage time targets, but to do so in a way that did not compromise the care of their patients.

A range of strategies was required to manage the different tension points. For the most part, these strategies appear to be novel responses to the effects of the NEAT, rather than adaptations of existing management methods. In the case of managing junior staff who are not performing well:

I've got a really weak resident at the moment, he's got no interest in clinical medicine, you know, he's just going through the motions to get his registration sorted so he can go off and do other stuff. Wants to be an academic. Fine. But he is forced to do a couple of years. And he ends up in ED cos that's where people end up who don't really belong anywhere in the system. Which is fantastic because it's the highest risk area of the hospital. And he comes to me and tells me about a patient with a headache who he's seen in Fast Track and I don't have the time, I'm busy, I've had two sick calls on the day, I don't have the time to go and see the patient. So my gut reaction is to do a CT and order some bloods. Whereas actually I would have sent this patient home and that would have taken me 5 minutes to see this guy and send him home. But I would have needed to talk to him and his mum and reassure them to get them home. Whereas actually the CT and the bloods becomes the default reassurance. Which is wrong isn't it? (Participant 1)

Participant 2, a senior registrar, believed that the time pressure had changed behaviour with the more junior doctors on staff, who were still learning and developing professionally:

But certainly also just in a busy department if you've got more patients than there are staff, we don't always have, you don't always feel, we do have that time pressure to see patients and, you know get them in and out. And we're probably hard on the juniors as well, we want them to go in and see the patients in a certain time and then come out and talk to us. So, I mean some things can be solved quite quickly, and other things they take time. And I think time is relative to the individual patient but also to the department itself. Um, external factors that you can't help.

Participant 3, a senior non-emergency consultant, noted that they were required to intervene in the management of Emergency Department patient far more frequently than before, both to support their junior staff, and to redress a loss of cultural connection between 'agency' staff and the culture of the hospital in which they work:

Everyone is, people are leaving the emergency service. They're just stressed… well one of the things that has happened is nurses have left and then they have to get specials and agency nurses in who don't know the culture and they're pushing the registrars all the time to get people out just because they want to do the paperwork [for the 4-Hour Rule]. And, the registrars then are busy or they don't have the confidence to stand up to these guys who are only agency nurses anyway. So they ring you and it's just ridiculous! It's really stressful!

Participant 4 described the managerial issues they undertook to 'protect' junior staff from the extraordinary demands of weekend rosters, which resulted in a complaint from the medical administration unit about the number of roster changes:

So they're [the junior doctors] giving them away, they're halving them [rostered hours]. Um, which medical admin keep giving out about. Like we've had an email saying there's too much roster shift changing. I wrote, I replied, well you actually have someone coming in for every shift, I wouldn't go fucking around with that for the sake of medical admin not being happy putting in new rosters. You know, why would you start putting — if first years are saying 'I'm finding this hard and instead of putting in 12 hours, can two of us do six hours' — I would think actually you're getting a bonus because probably both of them are actually going to do seven hours. So you're going to get 14 hours for the price of 12.

For most of the doctors, when push came to shove, the individual patient needs trumped all issues relating to the 4-Hour Rule:

I mean obviously to meet targets whatever, I don't think personally, if the patient needs the time then I don't give a crap about the targets. (Participant 2)

I think that it has to be your driving force [the care of the individual patient]. So I think that in the midst of all the rest if you're not getting that bit right and that's not driving you then you can't go on. Because you're gonna feel compromised, you're gonna have you know, you're gonna have such bad internal conflicts you know? I think for me I have to be driven by that, and even in my other administrative and academic roles I have to be driven by that. And very respectful of that and the people I am dealing with. Um, I think all the rest has to be secondary. (Participant 1)

This required managing the behaviour of colleagues and other staff in the context of the care of each patient, as Participant 4 explained:

So the [ED] consultant initially, remember him, he wanted me to move [the patient] literally 20 feet down to here [indicating a space on a page where he has drawn the ED department] so then they were clearing the 4-hour rule. But I'm like then they're an inpatient, then you've admitted them. What happens if [the patient doesn't] even want to walk, do you want me to Schedule them [make them involuntary under the Mental Health Act 2007 NSW]? From here to here? Whereas if we keep them here they're going to remain voluntary throughout. I'm like that's crazy. But it would have been keeping in the 4-hour rule. I haven't been asked that since [laughs].

It was interesting to hear that when the pressures become overwhelming, the doctors would 'retreat' into the care of individual patients as a way to reduce the 'noise' of pressure caused by the 4-Hour Rule across a busy department. Participant 1 recalled vividly a recent episode in their department when, one night, they were feeling the cognitive overload of a busy evening:

So that's the lovely thing about... Ironically if you were here for a really busy Saturday night shift around here the place is humming, there's, you know, broken legs out in the waiting room, and the resus that comes in, part of you goes 'oh fuck, I can't deal with this resus right now', but part of you also goes 'Phew, I've got a breather I'll just go and do the resus!' And I'll just deal with the resus [laughter] and the rest of it I'll just... When I walk out into the waiting room two hours later and they complain about me I'll go 'well I've just been dealing with the person with no airway', you know. Like 'fuck you'. So actually the resus becomes a break in the midst of the cognitive overload of the department.

4.4.5 Evidence for First Order Construct 5: Senior-led clinical practice

Iconic Statement: *Yet we send the intern to see the patient and then the senior might get to them in an hour. You know. Well that's like, well hopefully you don't do that, I'm working hard not to do that in this department but it's very hard. We're resourced to do it the backwards way around. Would you want the intern seeing you? No, you wouldn't. Everyone from exec, when they come in sick, they ask to see the consultant. Unfair.* (Participant 1)

The 4-Hour Rule has resulted in an urgent need for senior-led medical responses to a range of issues. All the doctors described various aspects of their workplace which had adapted to more senior-clinician-led activity as a direct result of the introduction of the NEAT. In most instances this was either to drive efficient management within the 4-hour window, or to manage power dynamics between professionals responding to issues of the

4-Hour Rule. Participant 1 gave an account in which both efficiency and power issues operated around senior-led clinical encounters:

… well actually 135 fires a day [patient presentations] and and we send our most juniors to see them first. Like that's absolute bullshit isn't it? So I think probably the way we would do it is to at least have some senior-led, we should. we, our… our structure in emergency medicine is the wrong way around. We should go in senior-led with the juniors learning.

Participant 3 explained that seniority was not just about managing patients more efficiently, but also about being able to influence other clinicians around the department to think differently about clinical issues:

… well I think for me, I mean actually I think I save the hospital a lot of money [laughs]. A lot of times I've had to say 'don't do that', or 'will you guys talk to each other', or those sort of things. And, um, so the individual patient encounters [have their place], I think the place where having a person like me is to, to do what I was talking about, is to do those complex assessments, try and make sense of what's going on, work out the best way forward, make sure everyone understands, a lot of education. Ah, and part of that is, um, assessing risk and trying to ameliorate risks. Um, and you need to have a fair amount of experience to do all of that. And at times you've got to be able to talk to some of the other senior doctors… But you had to get all of that together and it takes someone senior to get all these guys together to say, 'c'mon guys this is what we've got to do'.

For Participant 4, sitting in a senior registrar position between consultants and other more junior staff, their seniority was required to help keep a check on the behaviours and attitudes of other staff towards vulnerable junior doctors working in stressful environments impacted by the 4-Hour Rule:

So I just think, now to be fair what happened then after that, that particular bed manager has left me well and good alone... myself and a few of the senior regs just repeatedly said, 'don't care, don't care about your 4-Hour Rule, what's happening for the patient?' Cos we had a regs meeting about it… but we basically just said 'we understand that this is there, but at the end of the day what happens for the patient should be paramount'... [The] nurse in charges, who are kind of our time management, so they're the kind of pressure point — of which that [nurse] is their head — the majority of them are totally reasonable and there's two of them that aren't and it actually got to the point about January this year, where one of them was absolutely bullying the first years, like bullying proper. And so I brought that to our consultant meeting and that was fed back down and [the nurse] doesn't do that role so much. Because it gave [them] a power to bully with.

From the perspective of the ED consultant who was interviewed, the benefit of the NEAT had been to leverage earlier engagement with senior clinicians and a reprioritising of lower acuity work to nurse practitioners, so as to free up the medical practitioners for more acute clinical work with overall better balance of skills across the department over which they had oversight:

I use it as leverage to get what I want, between you and me. So, it's been really good for me to argue for increased senior FTE in the Emergency Department. To argue for some streamline processes. I think it has driven a lot of good clinical redesign. It has driven some bad clinical redesign as well. Um... so if you had senior people sitting up the front we could stave a lot of that off. You know a sore throat doesn't need bloods, and you know, so much stuff we see. I think it hasn't affected the complicated patients. In fact it's given me good leverage. The sick patients it's given me good leverage to do things that we actually should have been doing like getting people out of ED to ICU quickly. Getting people to theatres quickly, getting people transferred out of here to the tertiaries… On the minors, the senior is never going to get there, what we've done with the minors is put nurse practitioners in though and the 4-Hour Rule absolutely has given me leverage to... I have [a number of] nurse practitioners in this department, it's been great cos they're cheaper and they see people quickly and they have no other tasks, they just do minors. (Participant 1)

From the productivity perspective, they said a lack of senior-led clinical activity was certain to reduce the overall productivity on a shift:

… having someone senior making the decision the first time is the best thing you can do for productivity and that requires an organisational culture which is positive around that. Um, we exist in finite, like budget is always on everyone's lips around here. Um, FTE is always hard to get. I've just had a resignation I've been told I can't fill it until February next year. Heading into Christmas, you know which is the busiest 6 weeks of the year for an Emergency Department. Um, it's not prioritised and I think the other thing is, if people, people can cope with the bad shift here and there if the bulk of their shifts are well resourced, well supported or go well. It's that point where you feel like you're turning up most days where you're walking into chaos, I'm going to feel anxious all day. I'm going to worry that someone is gonna die and I'll feel out of control, that's when productivity really lapses. And, people slip into defensive practice then. They will start ordering more tests, keeping people in the department just to watch them for a couple of hours. (Participant 1)

So, even in situations in which senior-led clinical activity was being utilised effectively, efficiency could be compromised by other factors such as workload, cognitive workload and emotional stress. These factors, according to Participant 1, appeared to drive even

senior clinicians towards ordering more tests or wanting more time to monitor patient recovery, all of which was likely to push the boundaries of the 4-Hour Rule.

4.4.6 Evidence for First Order Construct 6: Safety

Iconic Statement: *I don't always get to find out what's wrong with you today, but my job is to make sure that when you leave here, you leave here safe. And we have a plan to follow up whoever if need be.* (Participant 2)

Safety is a core aspect of medical activity between doctors and their patients, generally achieved through effective communicative exchanges with patients and colleagues. There was a strong correlation between the participants' need to ensure an effective communicative exchange with patients and their decisions about safety in relation to a patient's final disposition. In addition, it was also clear that the drive towards the disposition (a technical term for where a patient will move from the department, for example, either home or admitted to another ward) had intensified as a result of the NEAT. These conditions produced acute tensions which lay at the heart of some of the strong adverse positions expressed about the NEAT.

The general frustration of all the doctors was expressed by Participant 1 when they observed:

Yeah so it [the 4-Hour Rule] does impact and it does mean that I'm doing much more, I'm much more doing the patient-doctor stuff with the ear out for what else is going on. I'm not luxuriating in doing that properly and putting the situational stuff aside for 15 minutes just to do that properly. And also, I'm interrupted a lot more. So everything is suddenly urgent. So, it used to be you only really got interrupted to get pulled into resus. And I get interrupted, you know a nurse will walk in when I'm with a patient now and say 'your patient in Bed 15 is about to breach'. You know, so everything is urgent and an interruption and I think that's cognitively dangerous.

This cognitive pressure, shifting between one set of patient-oriented problems and another, based on time pressures and interruption, concerned the doctors with respect to giving the patient in front of them the attention they needed:

But your performance, it's just that when things go smoothly it is generally the system is going smoothly. There is less pressure on the nurses, and less pressure on the nurses which means less pressure on you. You have a bit more time with somebody. Um, and like I definitely feel for like the first years this idea like, I'm quite calm and reasonable to say, I don't care that there's no bed, I'm not going to change my clinical

practice, they need to stay in ED. But if you have a lot of pressure, I think that can change your clinical practice. Is that good clinical performance? (Participant 4)

This prioritising of time-based targets resulted in many examples given regarding poor quality decision-making that put patients at risk, as Participant 3 explained:

I mean a typical example would be someone who has taken an overdose and they're still in an altered state of conscious but they've got their eyes open and they can say 'I want to go', and they get let out at 4 o'clock in the morning just to meet the 4-Hour Rule. I think it's insane, dangerous and if 'the man in the street' was sitting in he'd say 'what on Earth are you doing?'. There's one girl, they woke me up saying she wants to go, she wants to walk home to [a suburb known for crime] at 4 o'clock in the morning having woken up from some overdose, or I can't remember what it was. And I said, 'well does she have a key?' But nobody had bothered to look into all of those things, um, they just wanted to get her out before the four hours. That's just, I can't, it just makes me really angry. It's inhumane, it's stupid. Then we'll have an RCA at some time which says, 'oh, why did this person go?'. And I thought what if she gets raped on the way home, what if she… if people have taken an overdose, I'm sure you're aware, even if their eyes are open they can still be in an altered state for about 24 hours.

Participants expressed some diverse views about the importance of safety in their clinical encounters with patients, but the theme was clear that — a central purpose of their clinical work was to create a safe space for their patient:

… but the irony is you know that as the department gets more and more full, you can't, you know, actually getting people out of there would help you. But if you get them out to somewhere you don't feel is safe or they're not fully worked up, you're just going to worry about them anyway. You're not actually reducing your cognitive load… Well I'm going to go home and think about them all night and ring up three times during the night to check they got their antibiotics [laugh]. (Participant 1)

There was also an awareness of issues beyond the NEAT that impacted directly on poor outcomes for patients and which were compounded by a lack of control:

Who controls productivity? Like it is the system, in terms of if you like particularly, like, even the whole beds point of view. Like if the beds are always bloody full, people are discharged prematurely. Um, and I don't care what people say, that happens. You know, you don't have a subacute ward for those people to go from the ward, and is that best for those patients? Probably not. Does everybody know that? Yeah. But who controls that? Management, the system. (Participant 4)

Achievement of a shared sense of safety with a patient though was professionally rewarding in its own right:

I like to see that I have positive experiences with the patients. Um, whether that's they get out home out the door or if they're admitted, or we're making them palliative, but trying I guess, not going home feeling that I've failed a patient or that there's been a really angry interaction. That certainly shapes how I see myself as a good clinician. Because that's what makes me feel like I'm getting things right. And, you know, even if the diagnosis is bad at least I'm communicating with the patient right, I'm making them feel that they're safe and happy and can go from there. (Participant 2)

4.4.7 Evidence for First Order Construct 7: Hierarchy

Iconic Statement: *Because it's not appropriate for a junior staff member to be counselling a senior colleague about a poor performance. Because [a consultant should] not [be] measured, you shouldn't be measured compared to a registrar, you should be measured compared to your other colleagues...* (Participant 2)

Doctors adhere to strong hierarchical norms that revolve around their local working colleagues, with less regard to professional associations, institutional or state authorities. The presence of hierarchy and the participants' responsiveness to it were ever-present throughout the interviews. Hierarchy was both tacitly and explicitly implicated in every aspect of inquiry through the semi-structured interviews. It was expressed equally by the men and women, whether they were consultant or trainee. Invariably, hierarchy was affirmed as a positive though imperfect influence on the working lives of the doctors:

Because it's not appropriate for a junior staff member to be counselling a senior colleague about a poor performance. Because you're not measured, you shouldn't be measured compared to a registrar, you should be measured compared to your other colleagues… You've all got your own personal experience and then I think, consultants too I think as they get more into the administrative side, end up with more and they have to deal with the government side of things and that, which I don't have to deal with. They probably do get a better understanding of what may actually work… (Participant 2)

But then we also, at the regs' meeting every month, one of the topics is 'How are the RMOs [junior doctors]?'. And if there is a repeat problem, we would flag it and then the chief reg brings it to the consultant meeting and one of the consultants is directly in charge of the RMOs and that's how that works [to get the problem fixed]. (Participant 4)

As has been highlighted above, hierarchy operates within the profession; with its dealing with other groups of professionals making up the clinical team and hospital administration; and in relation to external agencies such as governments and professional organisations. Implicit to this is that 'clinical work' gives a person more privilege in the hierarchy:

I think that if you're a working clinician I think exec will shut up and listen when you say 'look the reason I did this this way is that it was the best thing for patient care'. And I think that probably in smaller places where everyone knows each other people will know your personal style, um, so other things will be a bit forgiving because people know that's the way you do your business and that's doing favours for them as well. Um, but I think in larger places where people don't know you that's often where people get trampled on and overlooked and not treated with much respect by people who don't do [clinical work] every day. And I don't think that's a medical thing, I actually think nurses who care for patients every day, physios who care for patients every day, um, even the admissions officer who comes and makes people sign the 'are you going to use your Medibank or your Medicare?' form every day, people who interact with patients respect that. People who don't have to do that every day seem to forget that a little bit. The odd person doesn't. Um, I think good managers try and do the odd clinical shift every now and then or at least try and hang out in a clinical environment to keep it alive in their brains. (Participant 1)

As a result of their clinical positions, senior doctors are in a privileged position in the hierarchy, where they can have strong cultural effects on the teams they work in:

No, I don't get sick! I have been, I mean I wouldn't stay home just because I have a cold unless I thought it was going to be a problem. Um, but there was, I took a sick day recently and everyone was sort of falling about. But they do say it means they probably don't take as many sick days as they might [laughs]. They all take a lot more than I do though [laughs]! Um, and they, I just can't work with people who are lazy and who tell lies. (Participant 2)

These hierarchical structures also mean doctors have to maintain many professional relations that, in the view of Participant 1, are too fragmented and as a result are not well coordinated for the needs of individual clinicians or good clinical care:

I don't think medicine, I don't think the organisational structures in medicine do ourselves any favours. I think, um, traditionally doctors have been very very averse to any external influence on the way we do business. Um... I think it's too fractured in it. Just thinking about my life and who the influential bodies are. I have a relationship with the university. I have a relationship with the College. I have a relationship with my own department. I have a relationship with the administration of the whole hospital. I have a

relationship with the administration of the area health service and local health district. I have a relationship with the Ministry. And then there are a series of national guidelines. That is all too fragmented. And then there's also a series of professional committees and bodies like HETI [education organisation], um, that's too fragmented for me.

The power-base of the hierarchy can often lead to unhelpful institutional views on the value of medical practitioners that make hospital systems less effective and efficient:

I actually think we as doctors I think doctors are arrogant. I know that's probably slightly overplayed which I know is a popular thing to say. But I think we think we are special and chosen and that's not doing us any favours. Like I think nurses do this much better. There's large aspects of nursing professional culture I don't like, but I think doctor professional culture which is hero individual doing their own thing, 'how dare you even tell me what to do?', I think it's wrong too. I think we need to build a middle ground. I think part of the problem is that the mandatory training that is imposed on us is imposed on us and it's done in ways that don't fit with the way we work. (Participant 1)

However, with respect to patient care, the majority of doctors expressed quite inclusive ideas about the importance of respect and communication with their colleagues, de-emphasising structural or power-based differences:

Um, I think you need to be respectful to your colleagues as well because they have, and that's nursing staff and pathology staff because everyone's got a job to do. Um, sometimes you can't understand why somebody might be doing something the way that they are, but um, or why things are taking so long, but we've all got a role to do and I couldn't do my role without a lot of nursing staff or wards people who actually bring the beds, or make the beds or things like that. You know, so that comes into play with the patients as well. Because I'm not the only one interacting with the patient, the other staff are as well. So yeah, I think that's important as well. (Participant 2)

As Participant 3 highlighted, the contribution of different disciplines to patient care invariably improved the totality of that care, in addition to supporting a doctor's overall professional development in their early years of training:

I've also been part of [a specialist treatment unit] when that was open. There were four original consultants, and, um, if I name them it will say who I am so, but they're all very well known people. We had a really, it was really fantastic, we had a multidisciplinary approach to trying to look at people who were profoundly [unwell] and very complicated and that was very formative.

Participants were aware that hierarchical power relations impacted on their relationship with patients. They described several examples of where the authority of the doctor could significantly shape the decisions about care from the patients' perspective, especially when the patient's ability to communicate was impaired, or diminished in some way:

[S]o, ethically… if you had impaired cognition and you presented to Emergency with obvious you know perforated bowel, and you will die unless you go to theatre and have that resected, then the implied consent is that you or your care giver gave consent for you to come to the Emergency Department which implied that you were wanting to receive to receive life-saving treatment. Um, so that's the way we operate. (Participant 1)

… and a lot of time we let the juniors go and see patients and then sort of come in at the end and don't actually realise potentially how they're explaining to patients and that could be culturally insensitive either from the doctor's point of view or the patient's point of view. (Participant 2)

I hope what occurs is a respectful interchange and, um, a lot of them, a lot of the people I see are frightened about whatever is wrong with them. (Participant 3)

The people with lung cancer who keep smoking, the morbidly obese people keep eating, you know just what is logical to other people is just not logical. So now when I go in to meet patients, the majority of the time you know anything can just happen. It's just like you know, 'please don't use ICE', but if you use ICE the day you go out on leave, that's really not going to shock me anymore. You know? It's not giving up, it's just more a saying 'okay well you cannot control any of this'. So whatever happens, happens. (Participant 4)

4.4.8 Evidence for First Order Construct 8: Trust

Iconic Statement: *I think that a lot of people feel that a good examination is what a doctor does. I actually think that we as doctors know that the examination really doesn't add much to your decision-making. But, um, the patient, for the patient, that is a really key step. It's a massive act of trust to let someone touch your body, particularly a stranger...* (Participant 1)

Trust is an essential condition of the clinical encounter at the interpersonal level because it creates the necessary conditions within which to act. Participants described a number of goals for their clinical encounters which supported good clinical outcomes for patients. This included effective communication, expert identification of caseness and applying the relevant interventions and support, and managing the situational demands and pressures of the workplace to ensure it had the minimum direct impact on patients. Within the

direct patient contact, it was the building of trust which doctors identified as allowing them to manage the reciprocal 'give and take' of the encounter. Trust was far from assumed, and most of the doctors explicitly described trust-building as an active task and goal:

… I meet a patient I'm working out in the first couple of seconds what kind of doctor do you want me to be; what communication style will I adopt to get the information quickly and efficiently from you and for you to trust me. To build rapport really quickly. And I think that is an ED thing to some extent. (Participant 1)

But I think it probably just comes down to communication. Like I can't change the fact that the 4-Hour Rule is there, all I can do is work with it. And, you know, as I already said, I think communication is fundamental to any patient interaction, so you need to kinda keep on top of that and that manages most of the patient's expectations. (Participant 2)

Trust was also described as a vital ingredient in relation to the people with whom the doctors closely worked with on shift. A trust relationship allowed for critical feedback or, in the setting of low trust, was a cause for concern for patient care:

[A]t [our weekly meeting] we've got patients we don't understand, we take, we have one every two weeks, so we talk about difficult people. We have a case, a team meeting and we'll discuss people. And I'll discuss there a patient I don't like and I completely disagree with what they're doing — we'll talk about that. Um, I think people would tell me if they thought I wasn't doing something. I mean I think there's enough robust interchange that they'd say, 'you know, I don't agree with that'. (Participant 3)

Um. I don't think your supervisors affect how you perform. It might. Like it's the staff around you in terms of like we have some good nursing staff and they will help, just even from basic like, if you get on really well with the nurses they will be helping with collateral and gaining, gosh like, yeah, it happens so smoothly, that you're not even aware of what's happening. And you get stuff done well but also quicker. And um, if you go in and a casual [nurse] is on then it's like a totally different game. Totally different. (Participant 4)

But definitely the wheels fall off earlier if you're tired, hungry, anxious about something, feeling like you can't trust someone else on a shift. It's an irony as well, we don't get to choose who is on the team… (Participant 1)

Well it's mainly the registrars, a few who are very troubled and that's great, but once they start lying about what they're doing and one of them wanting to come back as a consultant and I was at the staff selection

committee, and I said if you bring this guy back as a consultant I'm going to resign. It's just we're not going to work with him, he's, he's, you know, he tells lies. (Participant 3)

4.4.9 Evidence for First Order Construct 9: A sense of control

Iconic statement: *Some things can be solved quite quickly, and other things they take time. And I think time is relative to the individual patient but also to the department itself.* (Participant 2)

A doctor's sense of control over the working environment has a strong influence on performance and productivity. The participants identified control, or a sense of control, as being vital to their performance. This impact was subtle and varied. Maintaining control meant that despite the stress of busy shifts and complex or poor patient outcomes, doctors could remain resilient and continue working in high-stress environments. A loss of control was associated with poor work satisfaction and a sense of increasing risk of poor outcomes for patients, with effects that could roll into defensive medical practice and fear of litigation:

… people can cope with the bad shift here and there if the bulk of their shifts are well resourced, well supported or go well. It's that point where you feel like you're turning up most days where you're walking into chaos, I'm going to feel anxious all day. I'm going to worry that someone is gonna die and I'll feel out of control, that's when productivity really lapses. And, people slip into defensive practice then. They will start ordering more tests, keeping people in the department just to watch them for a couple of hours. (Participant 1)

Some doctors tried to take control of the influence of the NEAT by making it work to meet their needs, as Participant 1 said, *"the challenge for me is making it work for me, not making it work for them"*. However, the NEAT could also impact on management decisions due to factors outside the doctors' direct control:

Sometimes I think [the NEAT] can make it more stressful. Particularly if you've got the nursing staff coming at you, 'we need to get this patient out, we need to get this patient out'. Um, and there are things outside of your control. I can't determine how quickly the pathology comes back, I can't determine how quickly the imaging comes back. And often it's the results of those that will determine, and also time to analgese the patients, TLC them, fluids, things like that, will actually take a bit of time. I don't think four hours is an unreasonable time expectation in terms of, you know, for the patients they don't want to spend all day in the Emergency Department if they don't have to, and most of them pretty much their first question is 'how long am I going to be here?' Um, and that's probably someone who didn't need to be there in the first place [laughs] but aside from that, you know, it does sort of add to the stress and the

pressure of making you feel like, um, you're not doing a good job by their, by them sort of breathing down your neck, 'you need to be, you need to hurry up'. You can't necessarily hurry your patient interaction and what time it takes to answer their questions and reassure them and things like that. (Participant 2)

Control was also discussed in terms of its impact on collegial behaviours and how these could impact on a patient's care journey. Participant 1 recounted issues they had faced with managing surgical decision units which in one hospital were 'owned' by the department, and another hospital where the surgical department managed the unit:

I have a surgical decision unit which I control. I didn't like it when surgeons controlled it. When ED controls it, we move people into the surgical decision unit and we look after them until they get either admitted or sent home… So [another hospital] has the surgical decision-making unit for example, so they are admitted into the surgical assessment unit, but they are owned by the surgeons. And there's some resistance to that because they don't want to take anyone if they turned out to be particularly gynaecological or functional. Whereas, when we own the surgical decision unit, it doesn't matter I'm still gonna have to market the patient to gastro versus surgery versus gynae versus home at the end of the day… Yeah I'm really used to doing that, I've been doing that for last however many years! I've become an expert [laughter]!. I don't make over-70s go into it because I know no-one wants an 80-year-old with constipation.

A loss of control over patient care in the setting of four hour pressures was another of the most potent emotional triggers for the participants' strong views about the impact of the NEAT:

… the staff feel really stressed because of all of that, and the other thing for me is we get woken up all night when we're on for, and I am not saying this is the only reason, but we're on for three nights in a row and they will wake you up every hour for three nights in a row, ah, then you gotta go to work on Monday morning just because they're making these stupid decisions. (Participant 3)

Um, so number of patients, number of staff, um, you know, again things outside of your control like there's a lag time in, um, pathology or radiology or all those other things. I guess I understand the stress of, um, that of, you know, trying to sort out that patient because they are things outside of your control and can make it more difficult. (Participant 2)

Less control, or active chaos, in one's personal life was also likely to impact directly on performance and affect patient care:

Well I guess there is both inside the hospital and outside the hospital. Realistically we don't all live there 24/7 so you know from the personal point of view, obviously the married life with two kids, the lack of sleep impacts on my ability to think, generally, or put me on the back foot before I go to work. Um, you know other stresses outside of life in terms of your other relationships that can all impact on it. (Participant 2)

For Participant 4, relinquishing control of what constituted the 'right' behaviour of a patient had meant that the quality of their practice had improved, and they were better able to meet the patient's expectations of their needs:

… so in terms of this conversation trying to see what their problems are and seeing if there is a way of negotiating a path to help or to just decrease distress. And, yeah it's a relationship that's just based on, well, the majority of the patients understand that we are trying to help them although they might see that we are not doing it in the best way — so we are trying to negotiate that with them... yeah the aim of it is just to kind of get to the bottom of what's happening but, um, in their life at that moment. Um, it's a two-way dialogue... Yeah, you know in terms of [a sex worker I treated in ED] like okay go through this, let's work on all the different problems she had. And I keyed up for her to be admitted under the medics. And she left. And I remember I would be like, 'fuck! I just spent so much time'. Just expecting that this logical plan would be enacted and she just left. You know? Um, so there's all these different things, and I just remember these patients, and then years later you realise there is more of a balance between what you think might be helpful is not maybe going to be the most helpful thing for them right now.

Fundamentally, the doctors all agreed that the internal, external and interpersonal factors at play within the clinical encounter and its context in the hospital, and within the socio-political environment, meant that there was much that could not be controlled that, nonetheless, had a bearing every day on whether or not the 4-Hour Rule could be achieved for each patient. This view was summed up succinctly by Participant 4, in an enduring sentiment of all the doctors about what they were trying to achieve with their performance each day:

So we're trying to actually treat these non-ideal patients within a non-ideal model…. like, you know, when you're studying for your exams and it's well like ideal, an ideal environment. But the ideal environment is not what we work in. Um, we go for the next best option.

4.5 Summary

The summative analysis of interview data suggests that despite the differences in sex, years of experience and primary medical discipline, participants presented many convergent views on the impact of the 4-Hour Rule across several domains of their practice. These domains included effects on direct contact with patients, relationships with other staff members, and changes in how the Emergency Department operated as a place of learning and development in medical training.

A large number of interview content references were identified and coded, with a range of between 163 references and 312 references coding to a total of 47 meaning units (nodes) depending on the interview. These meaning units informed the development of superlative meaning constructs, the First Order Constructs. Some Constructs resolved from just a few data points but carried ideas that were coherent and clarifying across many meaning units. Other Constructs were totalising descriptions for a large number of the participants' views and reflections. Overall, the nine First Order Constructs had coded to them collectively an average of 84% of the entire content of each interview. This qualitatively suggests that the Constructs probably represent an important majority of the participants' collective views and descriptions on the patient-doctor relationship, professional performance and productivity, and the impact of the 4-Hour Rule on these phenomena.

Within the epoché and bracketing, dynamic interactions between the individual text references, meaning units and putative First Order Constructs took many months to work through to ensure the least interference from preformed ideas, idiographic experiences and academic goals in the distilling of the Constructs. The result was the nine First Order Constructs.

These data suggest that a range of pragmatic issues, such as the identification of caseness and maintaining safety in managing patients' unfolding clinical pictures, are held in tension against external drivers for meeting time-based targets and managing the consequences of high demands on doctors' intellectual and emotional resources. When participants became stressed by these competing demands, they described retreating into clinical work at the expense of situational awareness across the department, and they recognised the paradox this can present when dealing with pressures of time.

The participants expressed overwhelming negative and disparaging views regarding the purpose and impact of the 4-Hour Rule on patient interaction, patient safety, collegial interactions and workplace dynamics. Some doctors described in detail the emotional toll of being forced to make what they reasoned were unsafe clinical decisions, or to push back against senior colleagues pressuring them to make decisions so that patients would not 'breach' the 4-Hour Rule. Each doctor expressed a strong view that they would not allow the pressure of imminent 'breach' to adversely affect the decisions they made about the treatment and care of their patients. However, these individual decisions took place in an environment described by the participants as acutely reactive to the demands of time-based targets used to measure the overall performance of the Emergency Department. The rule was typically characterised as an externally imposed, clinically dangerous phenomenon that, more often than not, increased dangers for patients as a result of them being managed to meet the target and not their clinical need.

In terms of the empirical phenomenological inquiry, the First Order Constructs form the descriptive and essential naïve experiential content and meaning units for further analysis in the form of Second Order Constructs. The Second Order Constructs constitute the process of constructing a theory (or set of theories) that acts as a scheme of reference for bringing focus to the study, and guiding the chosen way of describing the intersubjective plane. In addition to interrogation of the data for the intersubjective content, imaginative variations on the First Order Constructs aim to locate the research work within the current relevant empirical knowledge context. Both objectives, defining the elements of phenomena within the intersubjective and testing the durability of these elements in the context of current empirical knowledge, are the central concern of Part 2 of the findings, presented in the next chapter.

CHAPTER 5: Findings Part 2 — Second Order Constructs

5.1 Overview

Empirical phenomenology calls for a second order of propositions for analysis inspired by the integration of First Order Constructs (which have been identified directly from participants' naïve descriptions) and the body of literature pertaining to the relevant empirical research fields. These second order propositions are meaning structures that may have a synthetic function based on first order propositions, or may arise from the synthesis of the empirical data with previous research and other evidentiary sources.

Second Order Constructs are guided by an iterative and imaginative interplay between structures of relationships described or alluded to in the First Order Constructs and descriptions of phenomena by participants, and existing theories of structure and relationship within other empirical literature. In *Chapter 2* and *Chapter 3*, I established the position that a coherent ontological framing of the clinical encounter and the modelling of the impact of administrative interventions such as the 4-Hour Rule are not adequately robust to account for the complex nature of health-care and Emergency Departments. As a consequence, and as a necessity in respect of answering the research question, the findings described in this chapter include extensive imaginative variations involving the nature and form of the ontology of structures of relations, in a critical realist paradigm, offered by participant descriptions, First Order Constructs and other literature.

The question of ontology draws out lines of inference and propositions aimed at illuminating whether or not there is an arguable objectual correlate between the characterisation of the nature of the world of the clinical encounter and hospital health-care as it appears within this research, and the general class of non-linear dynamic complex systems found in other parts of nature. This question necessitates a deep engagement with aspects of thermodynamics, complexity and biology, the results of which are several very lengthy propositions and arguments. Only within an arguable and extensive ontological frame can I then begin to make sense of the core question of how an administrative intervention has impacted on doctors' perception of their relationships with patients. A critical realist ontology as a structure of relations provides a grounding for exploration of the mechanisms, powers and agency within and between actors and institutions, in the ways in which a 4-Hour Rule might affect, and be affected by, the dynamic complexity of the hospital health-care system.

5.1.1 The process of imaginative variations

More than a dozen variations on the themes of (a) the structure of relations of the ontology of clinical encounter and health-care, and (b) the nature and evidence of the impact of the 4-Hour Rule, were explored in the development of Second Order Constructs. It has been necessary for the purpose of brevity and clarity to present only those that survived scrutiny. This is an important aspect of the development of these constructs, as it may appear that their creation was predominantly interpretive, something of an anathema to the tenor of transcendental phenomenology. Suffice to observe that it was the structure of relations emerging from naïve description that drove development of the ontological considerations, rather than the more interpretive process of finding a way to make the 'data' fit an existing theory. Aspers acknowledges the value and risk in empirical work of the tension between theory development and theory fit, as mentioned in Section 3.4. Similarly, once an ontological frame cohered in this inquiry, the interview data continued to drive the imaginative variations around the impact of the 4-Hour Rule, as opposed to searching for a fit of data to a preconceived model.

It was impossible to have predicted ahead of epoché, reduction and imaginative variation which literature would resonate with each construct, and so new literature references are presented as part of construct formation, rather than having been presented in the literature review and methodology chapters. This device is intended to give the reader a closer experience of the ways in which Second Order Construct development occurred. The imaginative variations for Second Order Constructs involved in excess of 960 articles, book chapters and webpages encountered across an array of literature spanning medicine, physics, history, psychology, organisational theory, architecture, complexity and ethics.

As described in *Chapter 3: Methodology,* a phenomenological state of epoché was encouraged to manifest for the duration of the empirical fieldwork and writing phase. The closest approximation to the sense of this intuitive state within which the second order propositions arose is best captured by Baader's description of the experience of 'gnosis' (as quoted in Eng):

The true gnosis is a circle one does not grasp bit by bit but all at once. Here one thing leads to everything else. So you ought not be surprised that one idea repeatedly refers back to others, and that we must refer to

other ideas while holding on to one. This shows the systemic character of gnosis, in that each idea guides and points to the centrum, and so to all the other ideas.[463]

Second Order Constructs spoke in iterative and referential ways to each other and to a whole, including individual meaning units in the narratives of the participants, and the First Order Constructs. If considered individually, each element of a Second Order Construct alluded internally to a completeness that could be, at the same time, only a partial completeness in the context of the totality of the whole of the research. However, when considered all together in their totality, the Constructs gave sense to a completeness of form, description and resonance within both the narrower worldview of the four participants as well as the supraordinal sensibility of the structure of relations of the intersubjective aspect of clinical encounter, health and illness, and human organisation and experience. The Constructs move from a centrum of suffering and entropy, outwards to a web of ideas and experience, and from idea-point to idea-point back to the centrum.

5.1.2 Second Order Construct road map

In terms of the findings presented in this chapter, empirical phenomenological inquiry uncovers evidence for a rich and complex structure of relations with objectual correlates shared with non-linear thermodynamics, homeostasis and the ethics of suffering.

Without a clear road map to establish how and why such potentially divergent ways of thinking and knowing are related, a reader may be left uncertain or confused along the demanding intellectual path traversed in these Constructs. Having a sense of the overall terrain and trajectory of the unfolding of the Constructs aims to provide the reader with an anticipatory sense of coherence with respect to a gnosis of the threads of inference, argument and proposition as they are presented.

As explained above, in order to properly consider the impact of the 4-Hour Rule on doctors' perceptions of their relationships with patients, an ontological frame is first detailed. From this grounding an exploration of the descriptions of the impact of the 4-Hour Rule is more rigorously obtained.

It will be proposed in the course of this chapter that suffering in human beings, in thermodynamic terms, constitutes a rapid increase in entropy. High rates of entropy

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[463] E Eng, "The Life and Work of Erwin Strauss", in *Phenomenology Worldwide: Foundations-Expanding Dynamics-Life Engagement,* ed. A-T Tymieniecka (Dordrecht: Springer, 2002), 667.

threaten the overall viability of the organism. Rapid changes in entropy activate restorative homeostatic processes which includes recruiting the help of others. States of high entropy or rapid rates of entropic increase can be 'reversed' (that is, suffering can be relieved) through the introduction, from external sources, of intentional non-random energy (including new information) into the human biological system.

Suffering is characterised as an ascendant energetic 'causal power' activating whole systems of relations, from the cellular to the interpersonal and institutional. The dynamics of relation between patient and doctor include the defining of a patient's place within the biomedical context, optimised or meliorised performance of individual practitioners within the clinical encounter, and recognition of the inimitability of each clinical encounter in the Emergency Department.

The phenomenon of suffering may have energetic correlation with the general class of physical phenomena related to entropy, described by the Second Law of Thermodynamics. Consequently, the configuration of these relations and energetics may be best characterised as manifolds in complex relations in which deterministic models of health-care break down. In this characterisation, health-care as a whole is not a function of the summative actions of its constituent parts, but instead emerges as a dynamic trajectory across a complexity phase-space.

Humans can signal to others that they are experiencing rapid increases in entropy (i.e. that they are suffering). In this framing, hospital Emergency Departments are places where extreme states of entropy (suffering) are concentrated as the suffering patient expresses a need for, and recruits, external inputs of restorative and transmutative energies.

Through the act of suffering, humans can be conceived of as being bound together ethically, in that the route of concern for the suffering of others lies in seeing this as similar to the suffering of oneself. Suffering can be understood as eliciting from others actions designed to relieve suffering. Expressed in critical realist terms, suffering energises the system. Suffering (increased entropy) functions as a causal mechanism that generates effects (actions) through the system of relations in the Emergency Department.

In this ontological characterisation, meaningful exchange of information between the patient and doctor is needed for the doctor to determine 'caseness' and hence the most appropriate interventions to reduce entropic levels. Meaningful exchange of information involves both explicit and implied modes of communication. Meaningful exchange

requires that in the clinical encounter, the doctor is fully present to the patient's whole lifeworld. In the process of informational exchange, the patient and doctor come together as a new sub-system. If the transfer of information describing patient entropy (symptoms and signs) is directed into an emergent system with already-heightened doctor entropy (stress, cognitive overload, lack of empathy), the probability of an overall improvement in knowledge is impeded and so progress towards a lowered entropic state is made more difficult.

The dimension of trust with social and organisational relationships can function to either reduce or increase entropy. Doctors may experience increased entropy — as for example, through anxiety about the need to meet administrative interventions as employees of a hospital, on top of their ethical and clinical responsibility to patients. A sense of trust between the patient and doctor might go some way towards decreasing entropy. For the patient, emotional and cognitive assurances engendered by a sense of trust in the motivations and abilities of the doctor may ameliorate aspects of their suffering. For the doctor, their sense of trust in the information from the patient, and in the patient's likelihood to heed their advice, lowers the doctor's internal entropy. A doctor's capacity to adequately define caseness may also be enhanced in settings of higher trust. The doctor's trust that the system of relations within the Emergency Department will support their work, through for example the system being geared towards concern for safety of the patient and the doctor, also contributes lower levels of entropy in the doctor.

Thermodynamically, an effective clinical encounter can be characterised by meaningful exchange of information, trust and caseness that come together elegantly, that is with maximal dissipation and minimal rise in overall systemic entropy, to generate appropriate effects (actions) through the system of relations in the Emergency Department, to relieve the suffering of the patient. Restrictive interventions, such as the 4-Hour Rule, appear to constrict the capacity of the doctor to engage in meaningful exchange of information, develop trust and identify caseness. This then contributes, in thermodynamic terms, to increasing entropy within the clinical encounter and Emergency Department. To express this concept in critical realist terms, universal increase in entropy might exert detrimental influence over the momentum and direction of unfolding relational dynamics within the Emergency Department.

5.1.3 Construct format

Each Construct is set out similarly to the First Order Constructs. A 'Construct statement' briefly introduces and summarises the context of the Construct in relation to the phenomenon of clinical encounter. Following the statement, a detailed narrative describes the imaginative variations as they occurred in the epoché and bracketing, with only a minimum of editorialising for the sake of clarity and comprehensibility. As mentioned in *Chapter 3: Methodology*, the vocative necessarily draws in a wide array of new literature and arguments not covered in the literature review or methodology discussions, by virtue of the empirical phenomenological task of imaginative variations, the content of which was unknown and unknowable prior to Construct formation. The representation herein ensures that the reader has a more authentic sense of the experience of the unfolding nature of the imaginative variations as they occurred in the actuality of the vocative.

The Second Order Constructs are organised in terms of the validation and trustworthiness framework discussed in *Chapter 3: Methodology*, Section 3.5.2. Each Second Order Construct is expressed in the vocative with the emphasis on the inferences pointing to potential evidentiary arguments for the Construct to be characterised as an eidetic element of the clinical encounter. The reader is reminded that inferences in scientific discourse can have several modes or purposes, of which the most frequent to be encountered within these Constructs are inferences for theoretical generalisation, and to a lesser extent inferences for the creation of hypotheses of structures of relations based on hermeneutic foreknowledge (see Section 3.5.2.2).

Organising the arguments and inferences in support of these theory-building objectives is aided by explicit reference to the critical realist paradigm popularised by Bhaskar, as previously described in Section 3.2.4. Fleetwood has elaborated on the foundations of the paradigm,[464] and with reference to additional critical realist literature, Figure 5.1 summarises the elements of a critical realist ontology and descriptions of each.

[464] Fleetwood, *The Ontology of Organisation and Management Studies,* 35-45.

Element	Features
Positioned-Practice	*Agents enter specific social relations by taking up slots or social positions within a nexus of social relations, e.g. patient, doctor, administrator. Each position is attached to a set of practices that define the social position and exist within the position independent of the individuality of any particular agent. Social structures consist of dense webs of relations between positioned-practices.*
Causal Powers	*Dispositions, capacities or potentials for the conversion of free energy by an agent into effects on the dynamics and activities of relations between positioned-practices. This power may or may not be actualised at any one time or by any or all agents within a positioned-practice. Agents may bring prior powers into a new positionedpractice and these may be modified, enhanced or diminished by the causal powers of the new position.*
Mechanisms	*These allow for the actualisation of causal powers to effect consequences within a social structure. They may be physical, discursive or extra-discursive, but are exemplified by the change they manifest within the phenomena of inquiry. Only to the extent that mechanisms remain intransient can they serve as explanations across time.*
Causal Configuration	*A cluster of social relations, positionedpractices, rules, resources and mechanisms. Configurations are emergent phenomena with consequences and effects not explained by the actions of individual components.*
Tendency	*A description of the typical way in which a causal configuration acts. Multiplicities of causal configurations exist in open energetic systems, with synchronous, asynchronous, competitive and synergistic tendencies all operating within a convergence of space-time.*

Figure 5.1: Elements of a Critical Realist Ontology (*adapted from Fleetwood, Miller and Tsang, Bygstad and Mungvold*[326 465 466])

In *Chapter 6*, an exploratory critical synthesis of the phenomenological data in terms of critical realist ontology is presented. For the purpose of understanding the findings presented in this chapter, reiterating the philosophical foundations of the critical realist paradigm reduces the risks of prematurely extended theorising to declarative explanations of the 'truth' of clinical encounter, health-care, and the impact of the 4-Hour Rule. The epistemological stance is one of fallibilism. That is, while the universal ontology is real and independent of the knowledge of it by the observer, the ways of knowing about that universe are to a significant degree socially constructed and so any conclusions should be treated modestly.[465]

[465] K Miller and E Tsang, "Testing Management Theories: Critical Realist Philosophy and Research Methods", *Strategic Management Journal* 32 (2010): 139-158.

The ultimate goal of the phenomenological inquiry was foremost to establish a foundation for better understanding something of the nature of the complexity of health-care and the encounters within it, bracketed from the natural attitude incumbent within a medicalised worldview of deterministic human and system relations, so that effects of interventions such as a time-based target might be better understood and even anticipated. The critical realist foundation provides a more cautious and tentative grounding for contemplation of the impact of the 'complex intervention' of the 4-Hour Rule, faithful to the general entreaty of the WHO and IOM for more systemic and complex characterisations of health services evaluation, and to the modesty inherent in the critical realist paradigm towards theoretical knowledge and its application to the 'actual' domain of the universe.[466]

5.2 Second Order Construct 1: Suffering

Construct Statement: Suffering can be understood as the final common pathway of experience of increased rates of entropy production within the human organism. In this sense, suffering is the antonym of gnosis as it represents a-gnosis: a sense of confusion or a loss of meaningful information.

The level of violence experienced and expressed within any Emergency Department of an Australian public hospital is, to the uninitiated, difficult to describe in terms that do not conjure incredulity or charges of hyperbole. Nonetheless, the immediate horrors of the bloodied and mangled body of the road trauma victim, or the desperate gasp of the cyanotic child in status asthmaticus, are without parallel perhaps but for events on a war field.

Furthermore, it is essential to understand that this violence is both given in the presentation of people to the Emergency Department as well as enacted by the doctors and health professionals within the department. To acknowledge that acts of violence may be visited upon these souls by health workers to first save a life, and then to relieve a patient's suffering, is something of a taboo, including for the doctors who enact these violences. Plunging a blade into the throat of the dying child to restore an airway. Gouging a bloody hole into the abdomen of the road accident victim to cut out their spleen to stem the haemorrhaging. Violent. Shocking. And yet essential.

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[466] B Bygstad and B Munkvold, "In Search of Mechanisms: Conducting a Critical Realist Data Analysis", *Proceeding of the Thirty Second International Conference on Information Systems* (2011)

The violence extends in more subtle ways too. The world is increasingly concerned with the ecological balance and order of the natural worlds. People seek safer ways to grow plants for consumption, to protect habitats for animals, and to reduce the personal 'footprint' of consumption with its impact on these natural orders. Yet if one presents to an Emergency Department with pneumonia, a blood infection or a pustulant wound, only annihilation of the colonies of bacteria will suffice, achieved by virtue of gigantic doses of antibiotics. There is no measured response, or careful evaluation of ecological systems. Only outright destruction is tolerated.

Finally, one may encounter acts of violence in the ethical dimensions of a kind usually reserved for punishing the criminal. There are Acts of parliament that allow for the subjugation of people to the will of a doctor, for enforcement of medical treatments against the expressed wishes of the patient, or for the intervention of the courts for such conditions as psychosis, mania and dementia. Doctors and health-care staff may physically restrain a patient and inject them with powerful sedating medications, even as they thrash about in violent opposition to any treatment.

On what grounds can it be justified that these physical, ecological and ethical acts of violence are not only tolerated but also anticipated and even desired as an outcome of the clinical encounter?

Answering this requires coming to some understanding of the intentions of the actors in the space of the clinical encounter. This may begin with a rude and blunt central idea that action and outcome are driven by egocentrism and anthropomorphic imperialism. The patient and the doctor experience wants and needs that express certain human 'drives' and 'instincts' which seek fulfilment, with less regard for the consequences to other natural systems. These drives have been described in myriad ways. In Freud's topographical model of the psyche, the drives exist 'below' the consciousness and within the Id, resident in the unconscious mind.[467] Szondi sought to describe a complete systemic drive theory for all human behaviours as an extension of the work of Freud and the psychoanalysts.[468] Evolutionary theory includes a range of drive theories from the genetic to the biological, and on to the social, that seek to explain the nature of systems

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[467] T Millon, J Melvin and I Weiner, *Handbook of Psychology, Personality and Social Psychology* (New Jersey: John Wiley & Sons, 2003), 121.

[468] L Szondi, *Experimental Diagnostics of Drives* (Orlando: Grune and Stratton, 1952), 2-4.

of behaviour enacted by animals in response to and in concert with their natural environments.[469]

The common tie among all drive theories is that a drive is activated by *a change in the equilibrium of the organism* which establishes a tension, often within a dialectical, that requires a response within the organism to resolve and re-establish order.[470]

5.2.1 Restoring order: a thermodynamic basis for the phenomenon of suffering

In terms of physical descriptions of the world, this is not dissimilar to the observation of biological systems operating according to thermodynamic principles. In thermodynamic terms, a state of increased entropy production (increasing disorder and loss of equilibrium or steady-state) threatens the overall viability of the organism and its systems, which activates restorative processes to arrest or slow the dissipation of energy out of the system and in some circumstances decrease system entropy.[471] [472] [473]

To understand this fundamentally requires an engagement with some thermodynamic concepts operating in non-ideal, non-equilibrium states. The work of the famous chemist Katzir-Katchalsky provides a useful introduction to the function of entropy in biological systems, summarised in his treatise on 'nonequilibrium thermodynamics'.[474] In it he describes that:

Life is a constant struggle against the tendency to produce entropy by irreversible processes. The synthesis of large and information-rich macromolecules, the formation of intricately structured cells, the development of organisation — all these are powerful anti-entropic forces. But since there is no possibility of escaping the entropic doom imposed upon all natural phenomena under the Second Law of thermodynamics, living organisms choose the least evil — they produce entropy at a minimal rate by maintaining a steady state.[475]

It transpires that in many biological systems there are *homeostatic mechanisms* that measure and respond to fluctuations around the 'steady-state' of the open energetic systems of the human body, which at given thresholds of derangement will activate responses that

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[469] N Shanks and R Pyles, *Evolution and Medicine: the Long Reach of "Dr. Darwin"*, Philos Ethics Humanit Med, 2007; 2: 4

[470] J Seward, *Drive, Incentive, and Reinforcement*, Psychological Review, 1956; 63(3): 195-203.

[471] S Rastogi, *Cell and Molecular Biology* (New Dehli: New Age International, 2006), 2.

[472] D Aspin et al, eds., *International Handbook of Lifelong Learning Volume 6 of Springer International Handbooks of Education* (The Netherlands: Springer Science & Business Media, 2012), 455-456.

[473] S Wolfram, "Statistical Mechanics Of Cellular Automata", *Rev Mod Physics* 55, no. 3 (1983): 601-644 .

[474] A Katzir-Katchalsky, "Nonequilibrium Thermodynamics", *Int Science Tech* (1963): 43-49.

[475] ibid. 49.

restore steady-state.[476] This is achieved through two phenomena broadly defined as (1) the irreversible flow of energy and application of energetic forces which are coupled to produce, in their simplest forms, a steady-state between two opposing extrema, and (2) the action of dissipative structures capable of reorganising energy dynamics to reverse or slow entropy production.[477] No system can avoid the dissipation of free energy after any electrochemical event into the surrounding environment of a non-equilibrium system, but through coupling and steady-state dynamics the free flow of energy into the system to maintain a steady-state can be very closely approximated to, or be even larger than, the entropy expelled into the environment surrounding the system.[478]

What is an organism to do in the event that local homeostatic responses are not enough to restore lower-entropy steady-states? Without other mechanisms and alerts, a system may suffer an overwhelming increase in the loss of energy that will rapidly degrade the functions of cells, organs and feedback loops, which without arrest will see them fail, and so on until death: the ultimate state of energy equilibrium between a living system and its external environment.

A response to change requires mechanisms for detecting change. Carbon-based logic systems, such as nervous systems, operate highly developed and integrated loops of monitoring, feedback and alarms to alert the organism to threat and harm. One of the highest level integrations at the biological level are the impulses arising from the sense organs and received and coordinated in the brain and spinal cord substances.[479] Melamede asserts that the nervous system exists primarily to assist the organism to maintain its steady-state a long way from equilibrium by closely monitoring the energetic transformations of the organism, including entropy.[480] Without this level of informational integration, a total system as complex as a human being would cease to function, or at least would function poorly.[481] These sense organs vary in sophistication and purpose — some sample blood pH as a proxy for carbon dioxide levels in the blood

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476 G Mobus and M Kalton, *Principles of Systems Science* (New York: Springer, 2014), 374.

477 D Kondepudi, *Introduction to Modern Thermodynamics* (Chichester: John Wiley & Sons, 2007), vi-vii.

478 Y Demirel, *Nonequilibrium Thermodynamics: Transport and Rate Processes in Physical and Biological Systems* (Blacksburg: Elsevier Science, 2002), 26.

479 C Alcocer-Cuarón, A Rivera and V Castaño, "Hierarchical Structure of Biological Systems a Bioengineering Approach", *Bioengineered* 5, no. 2 (2014): 73-79.

480 R Melamede, "Dissipative Structures and the Origins of Life", in *Unifying Themes in Complex Systems IV,* eds. A Minai and Y Bar-Yam (Berlin: Springer, 2008), 80-88.

481 R Arp, "Life and the Homeostatic Organization View of Biological Phenomena", *Cosmos and History: The Journal of Natural and Social Philosophy* 4, no. 2 (2008).

at the brainstem to regulate breathing; some mechanical organs deform under pressure applied to soft tissue to indicate force; and others, such as the eye focus, electromagnetic spectra onto cells that respond to differing wavelengths and amplitudes, providing a spectral approximation of the physical environment within which the organism exists.

Each and every one of these sense organs is designed, among other things, to provide information to the carbon-based logic system of the nervous system for homeostatic purposes, and are almost always directly connected to the nervous system into which they generate electrical potentials that are summed and analysed by neurones.[482]

Neurones may respond to the summed potentials of their inputs by generating *de novo* action potentials that are transmitted to other neurones for further coordination and synthesis, or they may directly activate cellular or organ responses.

An example of direct cellular homeostatic responses are the 'reflexes' stored and coordinated in the spinal cord of humans.[483] Consider a person who has tripped over. Should a person begin to generate mechanical and vestibular signals that indicate sudden loss of balance, reflexes are activated across the body to generate restorative counteractions to regain and maintain balance. These reflexes are generally experienced 'pre-consciously', that is, it is often only after they have had their effect (or at the earliest, only after their initiation) that one becomes aware of them.[484] [485]

In order for reflexes to operate, the thermodynamic properties of *flow* and *force* are coupled at many levels of organisation within the biological systems to achieve an outcome, which in this example, is maintained balance.[486] Flow and force describe the manner in which energy transforms or moves in space and time. Flow is usually down some established potential gradient. Force relates to one of the common and recognisable mechanisms, such as hydrostatic force or electro-mechanical force. In simple 'closed' systems these forces and flows can be expected to act independently.[487] However, in complex systems open to the surrounding universe, where multiple energetic processes

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[482] E Acevedo and P Ekkekakis, eds., *Psychobiology of Physical Activity* (Champagne:Human Kinetics, 2006), 17-22.

[483] D Chiras, *Human Biology* (Sudbury: Jones & Bartlett Learning, 2011), 83-84.

[484] A De La Seirra, *Neurophilosophy of Consciousness: Speculations and Conjectures* (USA: Trafford Publishing, 2012), 25.

[485] F Martini, *Anatomy and Physiology* (Phillipines: Rex Bookstore, Inc., 2007), 332-339.

[486] A Pol, "Life: Energy-Information Relationship Within Material Systems I. General Outline of the Concept", *Computers Math Applic* 20, nos. 4-6 (1990): 269-285.

[487] J Howland and M Needleman, "Biological Energy-Coupling in Terms of Irreversible Thermodynamics", *Biochemistry and Mol Biol Ed* 28 (2000): 301-303.

are in play simultaneously, and the system involves irreversible processes, this simplicity immediately breaks down. Instead, the force and flow processes become coupled.[488][489]

These couplings, the proof of which was a profound advancement of the 'Laws of Nature' according to Katzir-Katchalsky, were described by Lars Onsager in 1931, and had him awarded the Nobel Prize for Chemistry in 1968.[490] In a general form, what Onsager confirmed is that:

When two or more irreversible transport processes (heat conduction, electrical conduction and diffusion) take place simultaneously in a thermodynamic system the processes may interfere with each other... In such cases one may naturally suspect reciprocal relations by analogy to the reciprocal relations which connect forces and displacements in the equilibrium theory of mechanics and thermodynamics.[491]

His equations and proofs set out the nature of the reciprocal relations and show that in open systems that are not in equilibrium, energy transfers within the system are able to maintain steady-states in near-equilibrium environments.[492] Prigogine would later demonstrate that in complex, non-linear systems, such as biological systems, these thermodynamic couplings of force and flow are potentially the basis for the ability for complex organisms to exist because of the systems tendency to increase order and therefore decrease entropy.[493][494] Furthermore, in biological energetic systems, the rate of change of entropy can act as a source of potential energy that can drive thermodynamic forces in systems where there are energy flows via dissipative structures that direct energetic processes towards order.[495] [496]

Falling to the ground is intrinsically a highly significant increase in the rate of entropy within a human system. In addition, this rapid rate of entropic increase *predicts a set of outcomes* downstream of various states of continuing dis-equilibrium and higher entropy. That is, when a person is off-balance they become vulnerable to a range of outcomes that

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[488] ibid. 301-303.

[489] G Terzis and R Arp, *Information and Living Systems: Philosophical and Scientific Perspectives* (Cambridge Mass.: MIT Press, 2011), 3-25.

[490] Available at http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1968/ .

[491] L Onsager, "Reciprocal Relations in Irreversible Processes I.", *Physical Review* 37 (1931): 405-426.

[492] A Hübler and J Crutchfield, "Order and Disorder in Open Systems", *Complexity* 16, no. 1 (2010): 6-9.

[493] University of Texas, *In Memorium: Ilya Priggoine*, available at https://web2.ph.utexas.edu/utphysicshistory/IlyaPriigogine.html .

[494] J Wang, "Modern Thermodynamics – New Concepts Based on the Second Law of Thermodynamics", *Progress in Natural Science* 19, no. 1 (2009): 125-135.

[495] A Hubler, "Which Forces Reduce Entropy Production?", *Complexity* 19, no. 5 (2014): 6-7.

[496] L Ernster, ed., *Bioenergetics* (The Netherlands: Elsevier, 2011), 3.

could irreversibly affect their ability to regain and maintain steady-state. A broken jaw from striking the ground with their chin stops them eating; a loss of propulsion exposes them to capture by a fleet-footed predator; or the loss of correlation between visual stimuli and bodily coordination of the hands as they fall causes them to drop an infant.

Hence, human bodies must coordinate the flow of energy and the forces that act on and within their energetic systems, maintaining and restoring homeostatic systems of steady-state, if they are to regain a least dissipative state and avoid rushing headlong into the oblivion of the ultimate entropic state of stillness: equilibrium and, thus, death.

5.2.1.1 Thermodynamics in biological systems — a controversy

For some, the idea that thermodynamics can be extended to the system of living organisms is an epistemic bridge too far.[497] The work of Prigogine has otherwise challenged this purist interpretation of the Laws of Thermodynamics to extend its reach to irreversible processes in non-linear non-equilibrium states such as living organisms, winning him the Nobel Prize in Chemistry in 1977 for his contributions.[498] Prigogine discovered that as well as the coupling of energy flows and forces in biological systems, there are phenomena in which processes actively order the energetic systems away from disorder, that is, entropy.[499] In the case of reflexes activated in falling, Kugler et al have conjectured that reflex systems within the body are better characterised as dissipative structures, in the manner of Prigogine's theory, as opposed to more classical mechanistic stimulus-response connections.[500]

Philosophically, a first clue to the possibility that thermodynamics do operate at the scale of the biological is Katzir-Katchalsky's observation that the Onsager equations are more than just mathematical descriptions, they are actualities of the natural world — Natural Laws.[501] This means that one might then have *a priori* expectations that the relations operate at different orders of magnitude in the manifold of the universe, a concept mooted by Gunter as 'Laws of Functional Order'.[502] Fractals, operating as power

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[497] A Ben-Naim, "Can Entropy be Defined for, and the Second Law Applied to, Living Systems?", *ArXiv.org*, 2017.

[498] J Kinson, "Nobel Prizes 1977: Chemistry", *New Scientist (*Oct 20, 1977): 147.

[499] J Wang, "Modern Thermodynamics. New Concepts Based on Second Law Thermodynamics", *Prog Natural Sci* 19, no. 1 (2009): 125-135.

[500] P Kugler, J Kelso and M Turvey, *On the Concept of Coordinative Structures as Dissipative Structures: I. Theoretical Lines of Convergence*, in *Tutorials in Motor Behavior*, eds. G Stelmach and J Requin (Amsterdam: North-Holland Publishing, 1980), 3-41.

[501] Katzir-Katchalsky, "Nonequilibrium Thermodynamics", 49.

[502] M Gunter, *Levolution* (Bloomington: Archway Publishing, 2014), 156-176.

functions, are one example of a mechanism for a Natural Law operating in organisational systems at large and small scale, as is often the case for fundamental laws that can be expected to describe the nature of the universe at many scales.[503] In addition, in dissipative states (e.g. those of open entropic systems like humans), pattern formation such as those described in fractals are expected with much greater likelihood, and are experimentally verified to involve entropic functions in dynamical interplay via non-linear dynamics.[504][505]

In natural systems as an example, this fractality can be observed operating according to the power function of *quarter-power allometric scaling* ($M^{¼}$) for metabolic rate, but also for "many other anatomical, physiological, life history and ecological characteristics of plants and animals".[506] So, one might expect thermodynamic reciprocal relations, as a Natural Law, to exist across scales. Kurakin goes further to postulate a "self-organizing fractal theory (SOFT) of living matter… [which] implies the existence of universal principles governing self-organizational dynamics in a scale-invariant manner".[507] As a biological example of this principle, Gheorghiu et al have shown that in lung architecture and function, direct application of Onsager coupling force and flow dynamics explains the optimised fractal structure of lung architecture to complete its tasks of gas exchange and air flow, made possible only through irreversible thermodynamic couplings and fractal geometry.[508]

A second clue for the potential of describing lifeworld biological phenomena in the context of thermodynamics arises from the experimental data confirming that although macroscopic systems involving many billions of molecules are, in actuality, a *long way from equilibrium* (thus a long way from classical thermodynamic description), their component systems at a smaller scale, still macroscopic, are nearer enough to equilibrium that they

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[503] J Brown et al, "The Fractal Nature of Nature: Power Laws, Ecological Complexity and Biodiversity", *Phil Trans R Soc Lond B* 357 (2002): 619-626.

[504] M Cross, *Equilibrium versus Nonequilibrium*, Lecture Notes for Condensed Matter Physics, (Caltech, 2017), available at http://www.cmp.caltech.edu/~mcc/BNU/Notes1_2.pdf .

[505] A Kurakin, "The Self-Organizing Fractal Theory as a Universal Discovery Method: The Phenomenon of Life", *Theoretical Bio Med Mod* 8 (2011): 4.

[506] Brown et al, "The Fractal Nature of Nature", 619-626.

[507] Kurakin, "The Self-Organizing Fractal Theory", 4.

[508] S Gheorghiu et al, "Is the Lung an Optimal Gas Exchanger", in *Fractals in Biology and Medicine, Volume 4,* eds. G Losa et al (Basel: Birkhäuser, 2005), 31-42.

can be described in terms of irreversible open-system thermodynamics that allow Onsager equations to be applied.[509]

A third clue is defined by the relationship between thermodynamic effects at local-macroscopic scale (a cell) and the macroscopic (falling human) scale involving many molecules. Wolfe explains that in molecular terms,

systems go from improbable states (states having a small number of possible configurations) to probable states (having many possible configurations). For small numbers of molecules, however, the improbable is possible. If you toss 10 coins many times, you will occasionally (roughly 0.1% of the time) get 10 heads. If you could toss 6×10^{23} coins, however, you would never toss 6×10^{23} heads.[510]

To elaborate, for a pure deterministic evidence of proof to be made it must be possible to describe the set of initial conditions within the microscopic scale for every element of that system so that its end-state might be perfectly predicted as it moves from dis-equilibrium to equilibrium (or steady-state) in mechanical terms. This is, of course, an impossibility practically when one considers the sheer magnitude of particles involved in a falling human. Instead, the ability to predict the final end-state arises from *inference* about the behaviour of whole collections of individual atoms and their trajectories, thus reducing the enormous to the few. Jaynes clarifies the implication of this relationship, quoting Gibbs' interpretation of the Second Law:

Predict that final state that can be realised by Nature in the greatest number of ways, while agreeing with your macroscopic information.[511]

In other terms, Jaynes is conjecturing that for any given macroscopic event, any information about initial conditions at a microscopic level that are *not* required to predict the observed macroscopic end-point is essentially irrelevant to the ability to predict the event.[512] Experiments in the macroscopic domain are reproducible, despite almost certain subtle differences in initial conditions of individual particles, because that information is dissipated in the entropy of the system and of no material value to predictions of reproducible experiments.[513] This is not to say that every conceivable initial state of microscopic possibilities will result in the same macroscopic outcome given this relationship. Jaynes summarises the limit of the inference, and the reason it cannot

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[509] Cross, *Equilibrium versus Nonequilibrium*, 54.

[510] J Wolfe, "Cellular Thermodynamics: The Molecular and Macroscopic Views", *eLS* (2015), 1-12.

[511] E Jaynes, "Macroscopic Prediction", in *Complex Systems|Operational Approaches in Neurobiology, Physics, and Computers*, ed. H Haken (Berlin: Springer-Verlag, 1985), 254-269.

[512] Jaynes, *Macroscopic Prediction,* 255.

[513] ibid. 258.

achieve the threshold for a deductive 'law', when he concludes that "there remain a small minority of 'dissenting' microstates that would lead to a different result, and therefore deny our rule the status of logical deduction".[514]

Framing thermodynamics in Jaynes' manner means that predictions for macro-state outcomes become *probabilities*. This attitude recognises that an understanding of the totality of the system's energy is lacking so that one can only extend predictions of outcomes of a set of experiments inferentially, not deterministically.[515] Drawing conclusions about the nature of the relationship between initial conditions and outcomes should remain modest explanations of the physical systems to which they are applied, consistent entirely with the critical realist epistemic view of the fallibility of scientific truth statements.

With these three clues in mind, it is of no particular value to further describe infinite permutations of situations of rapid rates of increased entropy and the potential outcomes in human experience to understand why the human 'system of being' has invested enormous amounts of energy to monitor and rapidly respond to the energetic potential created by such rapid rates of increase in entropy. England argues that the very longevity and survival of the organism in a macro-scale steady-state of least energy dissipation over time is a function of its construction from the substances of a universe that obeys the laws of thermodynamics and are constituted in open energy systems like human bodies.[516] Midgeley, summarising theories of dissipative structures, suggests that from a universal view the whole human organism is a dissipative structure in entropic terms.[517] *Ergo*, the system obeys Onsager's and Prigogine's 'laws' of reciprocal relations and dissipative structures directing energy towards steady-state, be that system (essentially) linear (Onsager) or non-linear (Prigogine).

5.2.1.2 Making meaning of changes in entropy

The 'local-macroscopic' environment of the current thought experiment of falling predicts a flow of energy, in this case against the kinetic energy potential being realised in the mass of a human body falling under gravity towards the ground. The flow is directed towards re-establishing the steady-state of balance by the use of antagonistic muscles and

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[514] ibid. 259.

[515] R Dewar, "Maximum Entropy Production and the Fluctuation Theorem", *J Phys A: Math Gen* 38 (2005): L371-L381.

[516] J England, "Statistical Physics of Self-replication", *J Chem Phys* 139 (2013): 121923.

[517] G Midgeley, *Systemic Interventions: Philosophy, Methodology, and Practice* (New York: Springer Science and Business Media, 2012), 164-166.

the shifting of inertial trajectories towards a balancing centrum, often of least potential and kinetic energy.[518] This is achieved via the dissipative coordination of coupling kinetic forces with electrical flows entering and exiting the spinal cord neurones, which are responding to localised reciprocal impulses generated by the flux of matter and energy in the trajectory of recovery.

Beyond the rapid coordination of reflex actions, recovery of balance is contextual. For example, a recovery from a fall is of little value if the recovery trajectory does not account for the electromagnetic evidence being presented in the visual data that physical momentum is pushing one towards the cliff's edge. In order to achieve a recovery that is useful, the falling mass of the body must somehow 'make sense' of recovery within the context of the physical environment. This involves multiple sources of sensory data accessing the central nervous system, provoking it to apprehend and coordinate a wider range of equilibrating activities to ensure the whole human system is protected from continued high entropic outputs such as injury or death. Whichever way its output is directed, part of this activity is driven by the principle of homeostasis, and is linked to a phenomenon described as *interoception* — the emotive sensibility of physiological conditions in the body — which emerged evolutionarily from hierarchically arranged homeostatic systems.[519]

Such organisation is, by degrees, a matter of life, death and inevitability. Given the significant indicators provided by the inferences arising from: (a) the Natural Laws of reciprocal relations; (b) near-equilibrium equivalence of macro-systems to linear thermodynamics; and (c) the tendency of a system to move from improbable to probable states, there is some relatively safe theoretical ground to proceed on under the proposition that human biological systems obey, and monitor, the consequences of the Second Law of Thermodynamics as it is characterised in modern thermodynamic descriptions.

I return then, on firmer theoretical grounds, to my inquiry into the nature of the carbon-based logic system response to signals of rapid entropic increase under the conditions of falling. When falling, a body expresses all the relevant reflex phenomena to re-establish balance. Initially, in the state of reflex, significant amounts of information are yet to be provided into the central nervous system to signal the context of falling.

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[518] Kugler, Kelso and Turvey, *On the Concept of Coordinative Structures as Dissipative Structures,* 3-41.

[519] Acevedo and Ekkekakis eds, *Psychobiology of Physical Activity,* 22-23.

A surge of adrenal messaging releases adrenalin into the bloodstream and a cascade of 'protective' actions are selected and arranged: a contraction of neck muscles, hip flexors and abdominal muscles coordinates the bodily assumption of a posture suitable for rolling; blood vessels in the periphery suddenly contract to limit imminent blood loss and ensure adequate blood supplies to essential organs; and nociceptor gates within the spinal cord are switched off to ensure that pain signals are temporarily prohibited from ascending to the central nervous system. Each of these actions aims to minimise the continuing threat of the soon-to-arrive dissipation of accumulated kinetic energy, and to do so with the least impact on critical functions for bodily survival, so that there might be some chance of optimal conditions for a recovery towards the steady-state.

Hence, one may not immediately be conscious that one is falling. This changes rapidly, however, as interoceptive systems coordinate an apprehension of the sudden rise in entropy, signalling to consciousness the disequilibrium between sight, touch, muscle, vestibule and spinal cord. One is given to a *feeling of falling*. In short succession to the feeling of falling another feeling might be provoked, such as fright. Fright is both the origin of, and the response to, a second order of psycho-physiological responses that will attempt to restore balance.

In short, life has evolved biological structures, including in humans, that are capable of sense-making and stimulate the recruitment of free energy from the surrounding environment. This energy is injected non-randomly into biological systems with an intention to lower the overall state of entropy at the local level, while expelling entropy into the surrounding environment.[520] To do this in a densely organised structure requires widespread whole-of-organism coordination and integration. In higher order animals, including humans, monitoring and responding to the consequences of thermodynamics and entropy could be a major role of the nervous system,[521] and is achieved via interoception of bodily senses coordinated in the limbic, insula and anterior cingulate structures of the brain. These centres are critical to homeostasis, and also generate the primary emotional responses including 'fright, flight, fight', the coordination of sleep and dreaming, and the creation of memory and social cognition.[522] [523]

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[520] B Alberts et al, *Molecular Biology of the Cell. 4th Ed* (New York: Garland Science, 2002), 68-70.

[521] S Varpula, A Annila, and C Beck, "Thoughts About Thinking: Cognition According to the Second Law of Thermodynamics", *Adv Stud Biol* 5, no. 3 (2013): 135-149.

[522] Acevedo and Ekkekakis, *Psychobiology of Physical Activity*, 22-24.

[523] V Rajmohan and E Mohandas, "The Limbic System", *Indian J Psychiatry* 49, no. 2 (2007): 132-139.

Depending on the time-length of the falling person's arrival, or not, with the Earth, further layers of comprehension and response will have unfolded if consciousness has been maintained. 'Luck' may have it that a shift from the feeling of 'fright' to a feeling of 'relief' signals having narrowly escaped calamity by regaining a footing without harm. On the other hand, intense suffering may be expressed with loud yelps and exclamations as pain sensations assail the cortex in response to a broken wrist sustained when trying to break the fall with an outstretched hand.

Hierarchical integration of local and non-local homeostatic responses in humans has transcended local reactions to the changes in temperature, pressure and volume of the equilibrium systems of classical thermodynamics, and is, at least in part, experienced as feelings such as emotion.[524] There is, on first inspection, something extraneous about these feeling states. All the necessary physiological and physical responses required to address the fall could be enacted without any attendant feeling state, such as it is with the reflexes originating from the spinal cord. Why should a system 'waste' energy in an emotional response to the conditions of falling, when an organism is essentially trying to survive in the least dissipative state of existence?

Pakhomov and Sudin suggest that the emotions provide a powerful initiation of essential chaotic dynamics within neural hierarchies to allow for the direction of choice in response to a threat of rising entropy.[525] The processes of interoception, and its partial manifestation in emotions, may not only support restoration of steady-state when actual threat appears, but can also be activated *in anticipation*, based on information *predicting* the need for a coordinated response received from other parts of one's sensory and internal world.[526]

Human embodiment incorporates the necessary complexity in carbon-based neural networks to store and retrieve information, and to transfer flow energies (in the form of action potentials) into forces such as the work of muscles and the electrochemical forces created across cell-membranes that drive cellular activity. This coordination is achieved across many layers of integration of neural and cellular activity — perhaps at least theoretically — as a function of fractal geometries and their apparent relation to entropic

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[524] A Craig, "Interoception: The Sense of the Physiological Condition of the Body", *Current Opinion in Neurobiology* 13, no. 4 (2003): 500-505.

[525] A Pakhomov and N Sudin, "Thermodynamic View on Decision-Making Process: Emotions as a Potential Power Vector of Realization of the Choice", *Cognitive Neurodynamics* 7, no. 6 (2013): 449-463.

[526] J Herman et al, "Central Mechanisms of Stress Integration: Hierarchical Circuitry Controlling Hypothalamo–Pituitary–Adrenocortical Responsiveness", *Frontiers in Neuroendocrinology* 24, no. 3 (2003): 151-180.

states, such as those potentially observed in the metabolism and structure of the human central nervous system.[527]

Whole body coordination is predicated on conditions that can *drive* embodiment to the recruitment and transformation of energy to intentional non-random solutions. Hence the drives, no matter how constituted in theory, contribute to the management and maintenance of steady-states of existence in living organisms. Threats or derangements are sensed by the sense organs and perceived in the context of drive phenomena, and a highly sophisticated coordination of instinctual and apprehended-intended responses can be actioned via interoception against the threat in an attempt to restore or maintain steady-state. Feelings and emotions may be important global coordinating functions generated by the energy potential created in states of sudden increase in entropy, with this potential originating from and received within the interoceptive parts of the brain.

Where living beings encounter an overwhelming or continuous and dangerous leakage of energy away from previous steady-state, and where homeostatic responses, mostly of a reflex, dissipative type, have failed to restore steady-state, the whole organism must be coordinated to make sense of and respond to this ongoing threat. Having learned and evolved ways that can recruit energies from outside bodily systems to inject into disintegrating systems, living beings may also have available mechanisms that are effective in driving and coordinating these actions, and the actions of the universe surrounding, towards the goal of restoring steady-state.

5.2.1.3 Suffering makes meaning of entropic overwhelm

In hospital Emergency Departments, where extreme states of rising entropy are concentrated, staff bear witness to one of the most powerful expressions of a need to recruit external inputs of restorative energy — *suffering*. The events taking place in Emergency Departments also show that there are almost limitless conditions that may assail the human organism to generate suffering. Derangements of physical substance, derangements of physiological and biochemical processes, derangements of mental processes, tens of thousands of ways that the complex human organism may express sustained and catastrophic disturbances of function that have exhausted or overwhelmed homeostasis. No matter the origin, suffering is often be found to be the shared expression of excessive entropy production in the context of a hospital department.

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[527] A Seely, K Newman and C Herry, "Fractal Structure and Entropy Production within the Central Nervous System", *Entropy* 16, no. 8 (2014): 4497-4520.

Suffering is the common feeling expression of several sense-states. Pain. Stress. Fatigue. Disability. These sense-states are communicated by the sense organs to the central nervous system, where layers of analysis and interpretation take place to 'make sense' of the sensations. Without a major coordinating force within the central nervous system, competing drives may result in faulty, uncoordinated and ultimately disastrous, behavioural responses by the organism to its predicament. An extreme but illustrative example of this arises when consciousness becomes impaired in parallel with other life-threatening insults. There are many reports of bizarre and ultimately useless behaviours that accompany dehydration and delirium in people lost in deserts and other remote locations. Survivors explain that many sense-state derangements signalled by, for example, fatigue, hunger, thirst and pain push the person beyond the recovery of homeostatic processes. These sense-states derangements include descriptors such as 'panic' and 'suffering'. In situations of multi-system failure and stress, competing drives require analysis and coordination in order for a decision about survivable action to be made. Sense-states create interoceptive outputs that unify the organising abilities of the person towards decisions that can sometimes be life-saving, but at other times are completely bizarre and which only increase the likelihood of death.[528] [529]

Pakhomov and Sudin have provided mathematical qualification of the possibility that emotions may strongly influence choices through an effect mediated by the production of entropy itself within a given time-frame involving decisions in which indeterminacy is operating.[530]

In a similar vein, Bratianu argues that within the cognitive and emotional domains, information operates as a force or flow depending on the system in which it functions and is characterised better by thermodynamic description than by Newtonian mechanical dynamics.[531] He suggests that information coded as *knowledge* is a *force*, dependent on the cognitive processes of neural function. Emotions, on the other hand, function to inform the 'temperature' or intensity of the specific moment of using information as knowledge, and hence can be metaphorically considered a *flow*, just as heat is in thermodynamics.

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[528] M Jenkins, "Panic!", *Backpacker* 35, no. 254 (2007): 60-66.

[529] P Maruff et al, "Cognitive Deterioration Associated with an Expedition in an Extreme Desert Environment", *Br J Sport Med* 40, no. 6 (2006): 556-560.

[530] Pakhomov and Sudin, "Thermodynamic View on Decision-making Processes", 449-463.

[531] C Bratianu, "Changing Paradigm for Knowledge Metaphors from Dynamics to Thermodynamics", *Behavioural Science* 28, no. 2 (2011): 160-169.

This strongly mirrors, at least metaphorically, conditions in which thermodynamic reciprocal relations may apply.

In this metaphorical space, in the example of dehydration and delirium, monitoring and feedback systems are generating sense-data indicating a high rate of increasing entropy, both in quantitative terms, with the volume of signalling aroused by the conditions of increasing entropy, and in qualitative terms, with respect to the intensity or rate of increase of the total cumulative threat to homeostasis. In other words, the qualitative sense-data are the the feelings about increasing entropy.

Bratianu, and Pakhomov and Sudin offer a useful theoretical space of conjecture that perhaps does not meet the threshold for inference at this point. However, I might conclude that there are some potentially useful theoretical insights arising from their work, and worthy of deeper consideration with the goal of building further inferential support for the concept of emotions and cognition function in thermodynamic reciprocal relations in decision-making processes.

The thread of propositions does suggest that humans have hierarchies of systems that monitor and respond to changes in steady-state via homeostasis. The nervous system is particularly sophisticated in this regard, and can coordinate whole-of-organism responses to sudden changes in entropy production signalling harm or potential harm, with an important common expression of overwhelm being suffering. As a function of this sophisticated coordination, emotions and feelings are critical to directing decision-making when competing drives for survival or amelioration of other forms of suffering exist, under the foreknowledge that non-random energies can be injected into disorganising systems to halt or reverse entropy. In the setting of extremes of competing drives, secondary agency, for example in the form of another person, may be part of the dissipative response by a person who is suffering.

At this point I defer to Jaynes' conclusion that none of this can be conceived of as deductive proof, but remains in the realms of proposition or, at best, inference, to which future thought and research must be applied.[532]

From a critical realist perspective, suffering might be considered one of the mechanisms within the causal configuration of the Emergency Department with which power to act is actualised and transmits effects throughout the structure of relations. Deeper within the

[532] E Jaynes, *Probability Theory: The Logic of Science* (Cambridge: Cambridge University Press, 2003), x-xviii.

concept of suffering may lie fundamental scalar 'laws' of entropy which shape the tendencies of the actions of causal configurations, as well as providing causal power energising the activities and dynamics of the positioned-practices and their relations. The tendencies of the complex relations, if informed by non-linear dissipative structural behaviour, can be anticipated to observe a 'natural' economy towards least dissipative organisation. This would have a range of consequences, some of which are explored in the following section.

5.2.2 The economy and ethics of suffering as an entropic entity

Picking up the thread of the awareness of the biological capacity to recruit and inject intentional, non-random energies into disorganising systems to reduce overall entropy, one need only look at the investment by civilisations into responses to suffering to begin to unveil some of the 'pathways' of evidence for the conjecture that suffering is a feeling expressing many sense-states of loss of homeostasis and rapid entropic increase. Civilisation has increasingly invested in institutions and professionals that embody and enact coordinated, non-random energetic transfers into disorganising bodily and mental systems to support homeostatic processes and help restore steady-state. In one of this investment's most substantial manifestations, the public hospital has come into being.

This reflects an economical response to entropic conditions. By centralising and coordinating the many and varied necessities of effective responses to the relief of suffering (high-cost, highly expert and labour intensive processes and procedures) into institutions, civilisation has minimised the steady-state production of entropy compared with a model in which these ingredients are disaggregated into spatially separated entities. That is not to say that this is the ideal mode of entropic management, but at this very large scale of nature it is more likely than not to reduce unnecessary energetic disorganisation because of the tendency of increasingly complex systems to self-organise into systems of 'least unit action'; that is, to organise efficient energy flow networks according to homeostatic and entropic functions.[533]

From an evolutionary perspective, this human social organising strategy and investment suggests that the activities of these institutions are likely of great significance and benefit.[534] One need not look much further than the staggering success in increasing life

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[533] G Georgiev et al, "Mechanism of Organization Increase in Complex Systems", *Complexity* 21, no. 2 (2015): 18-28.

[534] S Bowles, JK Choi and A Hopfensitz, "The Co-Evolution of Individual Behaviours and Social Institutions", *J Theoretical Biol* 223 (2003): 135-147.

expectancy (and hence successful maintenance of the organism's steady-state) since the industrial revolution and the growth of modern city structures as evidence for the evolutionary advantage that has been conferred on the species as a result of its experiment with institutional responses to activities that risk sudden and dramatic entropic increases in its members. This is not just about hospitals, but includes civic responses to sanitation, movement of labour and resources, food supply, harmonious neighbourly relations, and all manner of important life-sustaining endeavours.

To what degree can the collective decisions required over generations of human populations to invest in the collective goal of 'increased life expectancy' be attributed as the driving force of decisions related to the civic organisation of health-care? I do not think this is plausible. It is my contention that increased life expectancy is the epiphenomenon of something much more granular, chaotic and immediate — the relief of suffering of individuals.

The reason for this is straightforward. Needless to say, the experience of suffering predates an institutionalised response to suffering, having probably existed for the whole of human history and pre-history. Humans have been, and remain, well and truly capable of suffering without the presence of institutions. Edelglass quotes Epicurus from the 3rd century BC:

Epicurus articulates a widespread analogy between philosophy and medicine when he writes, 'empty are the words of that philosopher who offers therapy for no human suffering. For just as there is no use in medical expertise if it does not give therapy for bodily diseases, so too there is no use in philosophy if it does not expel the suffering of the soul'.[535]

Epicurus' polemic offers another important insight. Not only has suffering formed part of the human condition across eons, but it is also manifested expression of the internal sense-state for the recognition, and the purpose of influencing the behaviours, of one's self *and* one's kin.

Suffering coordinates individual thinking and behaviour, directing it towards those actions that through lived experience might support homeostatic processes and relieve injury or derangement so that steady-state might be restored. In settings where individual energy recruitment is insufficient, humans have learned that a collective effort, inspired and directed by the suffering of the individual, can help the individual to resolve suffering and restore steady-state. I am immediately reminded of the history of suffering associated

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[535] W Edelglass, "Lévinas on Suffering and Compassion", *Sophia* 45, no. 2 (2006): 39-55.

with gout, and its power to energise thinking and behaviours among doctors and scientists over centuries as they tried to understand its origins in order to reverse its effects and resolve suffering.[536] [537] [538]

The very concept of the 'doctor' (in the Greek of Hippocrates' time, *iatros* — meaning 'healer') arose from the beginnings of the effort towards a naturalistic and rational system for explaining the origins of disease and the effective treatments as a collected body of knowledge, forming the foundations of medical institutions even into the 20th century.[539] Humans learned that by storing the lessons and experiences of the collective efforts to overcome gout, they were more readily able to uncover its pathological processes and invent new energetic interventions to relieve it. The eventual establishment of institutions greatly magnified the ability and success to respond to the suffering of the gout victim.

However, an 'institution' as an entity is incapable of responding to a person's suffering. Instead, institutions house the people who are capable of responding to distress and suffering. As a human relational phenomenon, it is perhaps ethics that might make better sense of why so much energy has been invested in responding to suffering. Lévinas lays out a phenomenological basis for the energetic power of suffering. He extends my earlier assertion that suffering is a common outcome of a multitude of potential sense-states, to include it as the essential signal to the meaning of the *overwhelm* of the sense-states:

> *Suffering is surely a* given *in consciousness, a certain 'psychological content', like the lived experience of colour, of sound, of contact, or like any sensation. But in this 'content' itself, it is in-spite-of-consciousness, unassumable. It is unassumable and 'unassumability'. 'Unassumability' does not result from the excessive intensity of a sensation, from some sort of quantitative 'too much', surpassing the measure of our sensibility and our means of grasping and holding. It results from an excess, a 'too much' which is inscribed in a sensorial content, penetrating as suffering the dimensions of meaning which seem to be open and grafted onto it.*[540]

Lévinas' characterisation of the 'too much' of suffering for meaning to be made sense of is a neat corollary with the previously described antonymic nature of suffering and gnosis. Suffering is, in his characterisation, a type of agnosis, a loss of meaning, a loss of

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[536] H Froelich, "The Pathogenesis of Gout", *JAMA* 28, no. 5 (1897): 212-218.

[537] C Smyth, C Cotterman and R Freyberg, "The Genetics of Gout and Hyperuricemia — an Analysis of 19 Families", *Journal Clin Invest* 27, no. 6 (1948): 749-759.

[538] A Reginato et al, "The Genetics of Hyperuricemia and Gout", *Nat Rev Rheumatol* 8, no. 10 (2012): 610-621.

[539] W York, *Health and Wellness in Antiquity through the Middle Ages* (Santa Barbara: Greenwood Publishing, 2012), 22-25.

[540] E Lévinas, "Useless Suffering", Ch 10 in *The Provocation of Lévinas: Rethinking the Other,* eds. *R* Bernasconi and D Wood, R Cohen, Tr. (London: Routledge, 2003), 156.

knowing. Lévinas suggests that in penetrating 'too much' into the 'sensorial content' from which meaning is arisen, suffering overwhelms that which one comes to know as meaning. Gnosis, the 'field of knowing' potential in our living substance, is cut off. For this reason Lévinas is predisposed to declare suffering as "useless, for nothing".[541] Thermodynamically, I could not disagree more with this conclusion, but phenomenologically one can appreciate that his dire conclusion arises from the propensity for pain, and its expression in suffering, to force withdrawal of the whole of self and consciousness away from the relationships with Other.[542] Notwithstanding, Lévinas acknowledges my two other central tenets of suffering:

… where ever a moan, a cry, a groan, or a sigh happen, there is the original call for aid, for curative help, for help from the other ego whose alterity, whose exteriority promises salvation[543] and,

It is the original opening toward what is helpful, where the primordial, irreducible, and ethical, anthropological category of the medical comes to impose itself — across a demand for analgesia, more pressing, more urgent in the groan than a demand for consolation or a postponement of death.[544]

In the first, Lévinas supports a conclusion that suffering is, indeed, an essence given to the experience of self, not just as an excess of something, but as recognition of a loss of understanding, absence of gnosis, *agnosis*, an increased entropy. In the second, the groan more urgent than the postponement of death is both the declaration itself and that which elicits the response of the other towards immediate relief, not for the sake of life, but for a relief from suffering as its first and primary command. Life extension is not a primary concern; rather, one seeks to resolve the "unpardonable suffering in the Other",[545] which elicits from our selves the foreknowledge of the uselessness of our own suffering and the drive to extinguish it. In the Lévinasian view, perhaps the relief of suffering is one of the few ethical principles, if not the supreme principle, to which we as civilisation have rightly invested vast collective resources.[546]

The organising principle of the response to the suffering of self and others might thus be characterised as tending towards an economy of energetic expenditure in relation to the

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[541] ibid. 157-158.

[542] The capitalisation of 'other' is here, and throughout the thesis, a device to connote the greater ethical context of otherness as things with which relationship is manifest but which are external absolutely to the embodiment of Self.

[543] ibid. 158.

[544] ibid. 158.

[545] D Patterson and J Roth, eds., *Fire in the Ashes: God, Evil, and the Holocaust* (Seattle: University of Washington Press, 2012),194.

[546] Edelglass, "Lévinas On Suffering And Compassion", 43-59.

universal principle of the Second Law of Thermodynamics. Excessive input of free energy into an overwhelmed biological system might, in accordance with the Second Law, simply hasten the trajectory of disorganisation if dissipative and reciprocal relations are exceeded. Equally, by the preemptive organisation of systems of response to suffering, such as hospitals and Emergency Departments and the organisation of expert knowledge, the collective efforts of humans to relieve suffering may exact an immediate dissipative function within the causal configuration of emergency health-care, which promotes an increased chance at recovery.

In Lévinas one finds a phenomenological corollary for suffering as a phenomenon of knowing (or not knowing as the case may be) and as a tractable explanation for the social and interpersonal calling to, and response to, the 'other'. Hence, entropy, suffering and the tendencies described by modern thermodynamic descriptions of the Second Law, along with phenomenologically derived essentialities of experience with the phenomenon of suffering, tend to a centrum of explanation in which energetic extremes are meliorated towards an alternative steady-state in which life remains possible.

Remarkably, despite the *prima facie* conditions of suffering within Emergency Departments, the word does not appear even once in 32,000 words in the transcripts of the participant interviews. How can a feature so historically and prominently associated with the practice of medicine in emergency settings be absent from its practitioners' discourse? Phenomenologically its absence is, perhaps, as important as its presence would have been if. The absence of suffering as an 'unintended consequence' has been identified in this inquiry, just as Aspers' empirical phenomenology method makes space for (see Section 3.5.1).

In the Lévinasian worldview, the suffering of the patient is at the same time the suffering of the physician. Casem has described several features of the clinical encounter that are required of a physician to manage patient suffering: clinical competence to manage clinical issues; demonstrated compassion; provision of comfort both emotionally and with medical interventions such as pain relief; communication directly relating to difficult content; and equanimity — the ability to avoid expressing nervousness and uncertainty and to maintain composure during stressful situations.[547] Moryl et al identified a range of factors contributing to physician distress and suffering, which revolve around the ethics of conflict and uncertainty, a sense of failure on behalf of the patient, an inadequacy in

[547] N Cassem et al, eds., *Massachusetts General Hospital Handbook of General Hospital Psychiatry. 4th ed.* (St Louis: Mosby, 1997), 605–636.

training for communicating difficult conversations, and the management of care-related conflicts between the patient, the treatment team, the family and the physician's personal view.[548] These two research perspectives shed light on the diametric pull of the demands suffering makes of the physician: in the former, the demand for professional excellence to minimise and defuse the suffering of the patient; while simultaneously in the latter the potential demand for a response to suffering-inducing conflicts and an internal sense of inadequacy to perform the role.

Mylod and Lee contend that, over the past century medicine and its practitioners, have pushed patient suffering to the margins of their concerns, as a function of "spectacular" progress made in the study of disease and its remedies, consequently eschewing fatalism in favour of medically induced optimism.[549] Lee's research shows that being aware of suffering, as a central experience of the patient, does not necessarily induce a preparedness to engage with it. Taking clinical responsibility for 'pain', 'confusion' and 'anxiety' seems more manageable than the individually overwhelming possibility of being responsible for the patient's totalising experience of 'suffering'.[550]

Participants spoke of seeing people on "one of the most stressful days of their life" (Participant 1), but indeed eschewed, as Mylod and Lee note, the direct naming of the experience of suffering. It suggests a retreat into medically induced optimism as a reaction against the 'too much' of suffering that an encounter with the totality of a patient's suffering may demand. The doctor's responsibility is withdrawn to the technical and objective as a compromise for the unmanageable or threatening consequence of a responsibility for the totality of another, with the ethical anaesthetic of 'medically induced optimism' offered as consolation to both patient and doctor.

5.2.3 Second Order Construct 1: Summary

These imaginative variations on the themes of suffering as an entropic mechanism support a conclusion that suffering may be an intersubjective eidetic phenomenon of the relations of matter and consciousness in the lifeworld responding to the fundamental priority for homeostasis via the maintenance of a least dissipative correlation between entropy and order in the vital substances. Eidetic means in this context that suffering has

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[548] N Moryl et al, "Suffering in the Patient, Family, and Physician", in *Holland-Frei Cancer Medicine. 6th ed.,* eds. D Kufe et al (Lewiston: BC Decker, 2003), 1117-1118.

[549] D Mylod and T Lee, "A Framework for Reducing Suffering in Health Care", *Harvard Business Review* (Nov 14, 2013).

[550] T Lee, "The Word That Shall Not Be Spoken", *NEJM* 369, no. 19 (2013): 1777-1779.

an actuality as a mechanism by which energy is recruited and transformed in the manifold of human beingness, rather than just constituting an abstracted idea.

This connection rests on the inference that suffering may be the final common pathway for expression of a sudden increase in entropy in the living substances, built from a coherent theory of the structure of relations between:

- the originality of suffering as the expression of the synthetic response of the carbon-based logic of the central nervous system to sudden increased rates of entropy within one or more integrated biological systems that have overwhelmed homeostatic processes and activated sensory organs to the imminent consequences of sustained derangement;
- the thermodynamic principles with which one can build solid inferences that not only do humans have the ability to recognise sudden rises in entropy with the purpose of restoring steady-state (for which *all* sensory organs may actually be implicitly designed), but that this capability must also express the nature of open energetic systems in non-equilibrium;
- the presence of Onsager's reciprocal relations, and Prigogine's dissipative structures in non-linear thermodynamic systems at distance from equilibrium, in the vastly complex human organism, allowing for the coupling of the potential energy from rising entropy to be transformed into electrochemical forces capable of converting that potential energy to work through the flow of emotions characterising the intensity (that is, temperature) and conditions for chaotic bifurcations for coordinating decisions directed at restoring steady-state;
- the reliance, in situations where homeostatic and self-initiated energetic responses are not enough to restore steady-state alone, upon the expression of suffering to generate responses from other people to invest more external non-random intentional energy into bodily and psychic systems on the Other's behalf; and
- phenomenologically, suffering as an essence given to the human experience that ties one to the other both as a result of the expression of suffering itself and because of the knowing of the uselessness of one's own suffering. This essential condition of human experience justifies the enormous and continued investment made collectively in institutions to discover and deliver ever more effective ways for the management and relief of suffering so that a steady-state of least dissipative energy, and all the benefits that this may confer on the experience of life, might be restored.

In a critical realist paradigm, discovery at this point is only inference of a propositional nature. There is some modest success at least in settling on some useful theoretical grounds of the structure of relations, and in those theories there are generalising features that offer some utility for making problem-framing schema that can be examined further. These inferences are by no means evidences to the degree of a deductive proof. However, this uncertainty is also a fundamental expression of the incompleteness of the ability to grasp and explain features of the initial conditions of inquiry and respects the fallibility of epistemology in a critical realist worldview. Rather than turning away hopelessly, this inquiry has examined the premise from varying angles that might illuminate some of the phenomenon's eidetic aspects and provide a degree of confidence that suffering may be a phenomenological essence.

5.3 Second Order Construct 2: Reversible Entropy

Construct Statement: Entropy is reversed by the introduction of intentional, non-random energy into a system. People seek quotidian equilibrium within a stochastic field of the lifeworld.

In many aspects, the inferences for this construct rest on the significant insights from the excursion into the evidence for Second Order Construct 1, just described. However, given the core nature of action on behalf of another in the setting of the clinical encounter, it is essential to the proposition's success that reversal of entropy, and hence resolution of suffering, is a possibility in its own right. One must be satisfied that there are mechanisms and powers within the structure of relations of Emergency Departments that offer some viable explanation for the reversal of entropy, upon which the resolution of suffering is determined, in accordance with the first Second Order Construct.

As explained above, generally speaking the systems constituting the human organism can be understood as thermodynamically 'open' energy systems as opposed to classically described 'closed' energy systems. Also, although the total system steady-state of a human is some distance from equilibrium, its many subsystems at the macroscopic level are close enough to equilibrium that the law of reciprocal relations as described by Onsager may operate thermodynamically to couple the flow and force energies of the systems such that they can maintain steady-state despite continuous energy loss and without violation of the Second Law. Further, Prigogine has shown that reciprocal force and flow dynamics exist in non-linear energetic systems a long way from equilibrium. These dynamics act as dissipative irreversible processes that convert free energy into work

which slows total system entropy by increasing organisation of the system, and thus lowers entropy. Pechenkin concludes that this thinking fits harmoniously within the philosophy of Husserl's phenomenology.[551]

Next, it is worthwhile trying to substantiate if in open energy systems the injection of non-random intentional energy into that system to reduce entropy can be described.

The processes by which life is able to forestall the inevitability of the Second Law have been extensively considered since the early 20th century, and by mid-century it was apparent that biological systems manage to maintain lower-entropy conditions in steady-state through the metabolism (conversion) of Gibbs Free Energy — that is the free energy available from the surrounding environment — as virtual *negative entropy and work*.[552] Life does not violate the Second Law; instead the tendency to disorder is minimised by expelling the entropy into the surrounding environment as waste, away from the organism, and converting input energy in the form of biomass into work that, among other things, powers processes that self-sustain the system at an orderly distance from equilibrium.[553]

I have established in the previous Construct evidence that suffering converges phenomenologically, psychically, physically, physiologically, socially, culturally and environmentally as an essential and unifying signal for, and an original phenomenon of, actual or threatened sudden increase in the rate of entropy production within the living substance of a human. From the phenomenological perspective it is also apparent that suffering, for the most part, can end. To satisfy this observable phenomenon in the context of entropic description, it is necessary to show that rising entropy can be reversed or resolved.

In some instances, given the singular direction of time in the macroscopic universe, one of the mechanisms which may reduce the entropy that triggers suffering is the passage of time itself. This of course appears to violate the Second Law of Thermodynamics, in which entropy in *all* phenomena must be positive or at least equal to zero over time. However, increasing entropy is true only for classical closed systems, whereas in open energetic systems involving irreversible process — like cells and bodies — *relative* negative

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551 A Pechenkin, "Does Prigogine's Non-linear Thermodynamics Support Popular Philosophical Discussions of Self-Organization?", *Acts Baltica Historiae et Phil Sci* 3, no. 2 (2015): 32-52.

552 E Schneider and D Sagan, *Into the Cool: Energy Flow, Thermodynamics, and Life* (Chicago: Uni Chicago Press, 2005), 11-24.

553 E Wong, *Cells: Molecules and Mechanisms* (Louisville: Axolotl Academic Publishing, 2009), 22.

entropy can be observed *within* that system because of the excretion of entropy as *waste* into the surrounding environment.[554] Hence, it is only the frame of reference that appears to suggest reversed entropy. Within the frame of the universal, the overall entropy is still always positive. So in open energetic systems involving homeostatic mechanisms, given enough time, the irreversible processes may be able to recruit and transform enough free energy from the surrounding environment, and excrete the necessary quantum of entropy, such that one sees a restoration of steady-state in a finite time period within the system of concern, notwithstanding that overall universal entropy remains positive.

For some health matters, the end-state of one's physiology and anatomy may approximate the initial conditions very closely. Think of the recovery from the infecting viruses of the common cold. Though the cold is virulent and unpleasant during acute infection, given enough time there is a return to prior function and appearance as if no insult occurred, all as a function of homeostatic responses. As an aside, from an information perspective, following infection the body produces useful information in the form of antibodies, which mean that on the next exposure to the virus it is unlikely to cause infection, hence the stimulation of increased rates of entropy production. Antibodies are 'anti-entropic' because they result in an overall increase of useful information coded in the body, allowing the body to efficiently dissipate the insult of infection a second time round.

At other times, however, steady-state may come at a major cost to the overall organising fidelity of living substance, such that while the body appears phenotypically relatively unscathed, in less easily observed ways it has been degraded. An example of this might be recovery from sunburn. After the acute evidence of toxicity (sunburn and pain), within days the body appears to regain its former appearance. This belies the damage done to collagen fibres and DNA in and around the skin cells. Over time, restorative recovery machinery may be unable to compensate for or repair accumulated injuries, to which wrinkling and skin cancer attest.

Still yet in other circumstances, the recovery of steady-state is actually more akin to a *reset of steady-state to a new normal*. These circumstances are testament to the extraordinary adaptive capabilities of some living organisms to re-establish effective function despite major conformational changes. This is especially so after diabolical physical and psychological injuries, such as say a loss of limb or the impact of severe psychological

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[554] H Westerhoff and B Palsson, "The Evolution of Molecular Biology into Systems Biology", *Nature Biotech* 22, no. 10 (2004): 1249-1252.

trauma from abuse. Inherent in any reset is the *a priori* condition that, within a given set of limits, the organism is capable of organ adaptation and has systems that preserve functions to meet the ongoing demands of the drives. Some of this recovery is due to inbuilt redundancy (removing a gall bladder does not affect the overall production of bile from the liver), the redeployment of essential actions to new structures (micro-vessel expansion to supply blood to body parts after stroke), or even to co-opting of part of the living substance to perform new tasks (such as the restoration of language function in the right hemisphere after a left-side middle cerebral artery territory infarct).

Yet there would be little need for the variety and complexity of health-care treatments, much less hospitals, if the total potential for recovery from suffering were contingent on self-originating energetic mechanisms. Instead, there are myriad insults, injuries and aberrations of the living substance that without the cooperation and input of external energies would tend to hasten expiry, or at the very least result in unyielding suffering. Humans, for the most part, appear driven to avoid this suffering. In these instances, in the Western traditions, society has tended to favour the biomedical paradigm as the dominant perspective from which to characterise and respond to or avoid suffering, and at the essence of this paradigm is the medical practitioner.[555]

If the introduction of intentional, non-random energy is possible to relieve suffering, especially in the setting of finite resources (such as a hospital Emergency Department), then it makes sense to try to select a form and intensity of energy with the greatest chance of reducing suffering in the shortest amount of time. This was alluded to in Section 5.2.2 above, in relation to the nature of the economy of entropic systems. In order to do this there needs to be a useful approximation of the initial conditions as they present in the context of the suffering. For extremely high entropic states, much of these data are obvious and immediate — unconsciousness, cardiac fibrillation, massive bleeding etc. Doctors can quickly deduce that remedying such massive rates of entropy production is life-saving, and due to the many centuries of medical research they get better and better at injecting the right form of energy, at the right amplitude, for the right amount of time, to stabilise these losses. They may even decide to 'suspend suffering' by deliberately anaesthetising the patient to render them insensible to the suffering for a period of time until some stability has been achieved.

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[555] R Hahn and A Gaines, eds., *Physicians of Western Medicine: Anthropological Approaches to Theory and Practice* (Dordrecht: Springer Science & Business Media, 2012), i-ix.

However, there are vast number of presentations to an Emergency Department with initial conditions, what doctors might call 'diagnosis', that are not, on first appearances, easily deduced.[556] Important aspects of the traditions and rituals of the medical encounter in Western medicine are designed to address this information gap. Empirical research consistently demonstrates that it is the history taking, followed by smaller contributions of information from the physical exam and diagnostic testing, which correlates with correct diagnoses and, thus, a higher chance of optimal management to relieve suffering.[557] [558] [559] Hence, a dialogue between patient and doctor as the basis for informational exchange is a foundation of the clinical encounter and action within the biomedical processes of health-care. I earlier suggested that phenomenologically, entropy was the antonym of gnosis — a state of agnosis, of being in unknowing or confusion. All clinical encounters begin in a state of unknowing of the other, a state thermodynamically of higher entropy. The research participants were acutely aware of this, describing that one of their most important responsibilities was to create the necessary circumstances for a trusting and effective communicative exchange with their patients to establish shared meaning.

The consequences of this logic, if the goal is to alleviate suffering, is that high-fidelity informational exchange between patient and doctor correlates with a greater chance of the relief of suffering. Diagnosis is a key outcome of the informational exchange and involves significant contribution from the dialogue between patient and doctor. Diagnosis provides constraints and limits to meaning-making of the total information expressed and exchanged in the encounter. Further, for the exchange of information to be useful, that is, to be able to generate work, the fidelity of information exchange must be maintained and, according to Aquino et al, is in part contingent upon equal complexity of the systems exchanging the information.[560]

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[556] D Wald, ed., *Emergency Medicine Clerkship Primer: A Manual for Medical Students* (USA: Society for Academic Emergency Medicine, 2012), 23.

[557] J Hampton et al, "Relative Contributions of History-Taking, Physical Examination, and Laboratory Investigation to Diagnosis and Management of Medical Outpatients", *BMJ* 2, no. 5969 (1975): 486-489.

[558] R Market et al, "Comparative Value of Clinical Information in Making a Diagnosis", *Medscape Online* (2017), available at http://www.medscape.com/viewarticle/480241_4 .

[559] T Tsukamoto et al, "The Contribution of the Medical History for the Diagnosis of Simulated Cases by Medical Students", *Int J Med Ed* 3 (2012): 78-82.

[560] G Aquino et al, "Transmission of Information Between Complex Systems: 1/f Resonance", *Phys Rev E Norlin Soft Matter Phys* 85, no. 5 (2011): 051130.

These predicates may imply some rationale as to why the clinical encounter involves predominantly interpersonal relations and communications between the patient and the doctor. Information exchange alone may not be adequate to actually reverse or slow the rate of entropy. The information needs to be *meaningful*, to be adequate to support meaning-making of the information as it relates to the initial conditions of the patient and their presentation. Meaningful information supports the ability of the doctor to decipher, deduce and induce an approximation of the diagnosis, which then informs the types of energetic interventions. Such an arrangement further indicates that there are significant limitations in 'treating' high entropic states where there is a lack of fundamental knowledge about the informational dimension of entropy (as opposed to just the physiological and physical dimensions) within a complex biological organisation.

How then might information change one's living substance through the work of electrochemical forces in human carbon-based logic systems of neural networks? This is an important issue given that the creation of information and the transfer of information between patient and doctor appear to be directly related to defining an optimal pathway for recovery in the clinical encounter.

5.3.1 Useful information may be anti-entropic

Wicken has previously advanced the notion of a relationship between information and entropy in living systems, an elaboration on conjectures made by Schrödinger in the mid-20th century, in which natural systems acquire and use information through ecological interactions that underpin a Neo-Darwinian view of evolution.[561] Notwithstanding Wicken's theory, the issue of how information and entropy may or may not be related in biological systems remains contentious, but it is increasingly recognised that information may have a broader meaning in biological systems, involving both information-rich macromolecules and an as yet not well understood information model of electrochemical reactions.[562] There is even a movement to replace the word 'entropy' with 'information' because of its more precise definition of what the entity of entropy is really originating from — a difference in information.[563]

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[561] J Wicken, "Evolution and Thermodynamics: The New Paradigm", *Systems Research and Behavioural Science* 6, no. 3 (1989): 181-186.

[562] C Thaxton, W Bradley and R Olsen, *The Mystery of Life's Origin: Reassessing Current Theories* (Dallas: Lewis and Stanley, 1992), Ch 9.

[563] A Ben-Naim, *Farewell to Entropy: Statistical Thermodynamics Based on Information* (Singapore: World Scientific Publishing Co, 2007), xv.

In classical thermodynamic terms, when two systems come into contact, energy will flow between the systems towards an equilibrium in which entropy is maximised.[564] Heat will flow from a warm system into a cold system (perturbing the particles within it) until they are the same temperature, and never the reverse. In human encounter, however, two people are two systems not classically described; rather, they are open energetic systems a long way from equilibrium. This means that theoretically the overall entropic change within the new binary system of the clinical encounter, which we might initially believe would cause an increase in entropy, can be minimised by the expulsion of entropy into the surrounding environment as waste, and by doing work with the energy of the differences in initial entropies of the two systems via reciprocal relations, as detailed in Second Order Construct 1, earlier.[565]

If one substitutes entropy with information, one can begin to construct an inference in which the information differences between patient and doctor are a foundation upon which the work of health-care and the relief of suffering is in part based. It begins with Shannon Entropy, the formal information science concept of entropy as a function of uncertainty of the state of a given variable, which Shannon demonstrated is equivalent to the entropy of the system.[566] This means that systems in high entropy express *low levels of meaningful information* about the state of the system, making predictions about its future state uncertain, and vice versa.[567]

A patient in distress may express information in the language of symptoms and signs of physiological and physical derangement that, to a doctor, convey significant meaning. Thus, in ideal circumstances, the low levels of meaningful information in the system of the patient (high entropy) are converted to meaningful expressions of disease and disability within the biomedical paradigm (low entropy) through the doctor. In addition, the 'unknown meaning' of pain or disability is, under the hand of the doctor's examination, given meaning and context in the biomedical paradigm, thus again potentially increasing useful information and lowering entropy.

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564 A Ben-Naim, *Discover Entropy and the Second Law of Thermodynamics: A Playful Way of Discovering a Law of Nature* (Singapore: World Scientific, 2010), 180-182.

565 A Kleidon and R Lorenz, eds., *Non-equilibrium Thermodynamics and the Production of Entropy: Life, Earth, and Beyond* (Berlin: Springer Science & Business Media, 2004), 2.

566 C Shannon and W Weaver, *The Mathematical Theory Of Communication* (Baltimore: University of Illinois, 1964), 50-57.

567 I White, D Mottershead and S Harrison, *Environmental Systems: An Introductory Text 2nd Ed.* (Cheltenham: Stanley Thornes, 1998), 492-493.

I can further conjecture with this logic that the quality of information the doctor pieces together about the state of the patient's suffering, and how well the information provided approximates the initial conditions (physiological, physical and psychical) of the patient, can help dictate the type and magnitude of the energy required to mitigate or reverse the rate of entropy production within the suffering person. That is, what treatment or intervention is best suited to reverse or slow the patient's system entropy.

Along similar principles Wallace argues that, with some modifications consistent with thermodynamic principles, it is possible to describe the evolutions and trajectories of whole social systems, which operate at a dynamic steady-state some distance from equilibrium, from an 'initial state' to and 'end state', in accordance with the Second Law and thermodynamics generally.[568] Hence there is some evidence that, at least theoretically, social encounters can have thermodynamic descriptions.

At this stage in theory development, this analysis cannot extend beyond the analogous. There are good explanations and models for the thermodynamics of the flow of energy to convert Gibbs Free Energy to chemical and thermal work, but they do not yet adequately account for particular phenomena of complex systems such as conformational consistency and self-replication. *Conformational entropy* is the energy required to ensure not only that chemical and thermal work occurs in the right direction, but also that it occurs with sufficient *complexity* to create self-authoring and self-replicating information-rich macromolecules that are prerequisite to life.[569] England, cited earlier in Construct 1, has recently proposed just such a mechanism, based on thermodynamic principles, in which inorganic matter responds to its environment with a tendency towards lowered entropy (that is, increased complexity), but it remains controversial.[570][571]

I can now postulate the relationship between information exchange and non-random energy injections into the high-entropy system of the sick patient. I note that the patient expresses information about their internal physico-physiologico-psychic state in flux energies (electromagnetic information in the visual spectra, acoustic waves in the air from voice, measurement of blood pressures and temperatures in measuring apparatus etc.)

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[568] T Wallace, *Wealth, Energy, and Human Values: the Dynamics of Decaying Civilizations from Ancient Greece to America* (Bloomington: AuthorHouse, 2009), 469-489.

[569] Thaxton, Bradley and Olsen, *The Mystery of Life's Origin,* Ch 7-9.

[570] England, "Statistical Physics of Self-replication", 121923.

[571] N Wolchover, "A New Physics Theory of Life", *Quantamagazine* (Jan 22, 2014), available at https://www.quantamagazine.org/a-new-thermodynamics-theory-of-the-origin-of-life-20140122/ .

into the surrounding environment. In the emergency room the space has been injected with the *non-random* energy of the sense organs of the doctor, acting as a dissipative structure in the system of clinical encounter through the act of observation, diagnosis and management. The doctor's sense organs absorb the signals as Gibbs Free Energy — that is, as energy capable of doing work from the surrounding environment (acoustic waves, electromagnetic spectra etc.). These energies and their reception by sense organs may initially increase entropy in the substance of the doctor, but unlike in the suffering patient, the rate of entropic rise is managed effectively within the doctor's homeostatic and dissipative processes and will be discharged into the environment through the usual, and non-disturbing, waste pathways at some time later. In the meantime, the informational exchange from patient to doctor enables the cognitive and emotional forces and fluxes of the doctor to estimate a value for the underlying micro-state conditions of the patient who is suffering. Useful (accurate) information about the micro-state results in immediate reductions in total system entropy.

This exchange, under good enough conditions, now *lowers* the overall entropic state of the newly created subsystem of the patient-doctor relationship because the whole of that system has *more useful information* (thus lower entropy) about the system, and the dissipative capacities of the doctor have been injected on behalf of the suffering patient. The force and flux dynamics of this change in entropy are also now coupled with electrochemical action potentials and the work of ligands and receptors across the cellular organisation of both patient and doctor, with the intentional arrow directed towards the goal of re-establishing a steady-state within the dyadic system. Information can, and does, effect material change within patient and doctor, from which work can be done to arrest or slow the rate of entropy production and recruit further transmutative energies in the form of analgesia, antibiotics or the surgical blade, for example.

The exchange of information and its effect on the newly created social subsystem of the clinical encounter may alone serve to lower entropy across the whole system and, with it, homeostatic processes are given time and energy to recover. However, recovery may require additional thermodynamic interventions, such as staunching of bleeding with sutures to re-establish contact between wound edges, or the provision of a chemical compound in the form of medication to arrest a highly entropic deranged electrochemical reaction. Due to the irreversibility of the processes, the coupling of force and flow energies, the continuous availability of free energy to input into the system from the surrounding environment, and the ability to delay excretion of the decays of the

informational transfer, the clinical encounter can be conceived of as a thermodynamically efficient system in which the high entropic state of suffering of the patient can be lowered. This allows for restoration of homeostatic processes to return the patient to an optimal steady-state, or to find a new steady-state in settings where major conformational changes have occurred within the living substances of the patient.

5.3.2 Relative negative entropy is dynamic and contextual

This brings the propositional inferences of this logic to a point where it becomes possible to infer the profound relationship between the internal thermodynamic state of the doctor, expressed in part as a function of performance, and the impact of this on the outcomes for their patients. If information describing patient entropy is transferred into a system of already heightened doctor entropy, it will reduce the probability (increase the informational entropy) of an overall improvement in knowledge of the information of the whole clinical encounter sub-unit, and thus impede progress towards an overall lowered entropic state across the combined system that is required in order to reduce and ameliorate suffering. Doctors are bound by the same physico-physiologico-psychic processes related to entropy in human embodiment. The participants' descriptions of a loss of trust or sense of control may exert entropic effects on homeostatic forces and flows, just as physical insult or disease would in a patient.

External environmental forces and energy flows that heighten systemic entropic states can now be understood to potentially greatly affect the probabilities of a successful resolution of suffering, via their effects on the availability of free energy in the environment and the local effects on the entropic states of both patient and doctor. These external forces may also impact on the spatial relationships between patient, doctor and hospital infrastructure at other scales of organisation. This can be illustrated with the pertinent example of the issue of overcrowding in Emergency Departments. Consider the entropic impact of an excess of bodies injected into a space in which there are inadequate places for them to be stationed. Inevitably the quality of information about the total state-space of the department is degraded as the rate of input of patients exceeds the capacity of the space to accommodate them, just as the injection of more molecules into a closed space increases the pressure and temperature within the system and, thus, increases the entropy, according to the principle of non-decrease of entropy.[572]

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[572] E Gyftopolous and G Beretta, *Thermodynamics: Foundations and Applications* (Mineola, New York: Dover Publications, 2005), 102-115.

Furthermore, it is possible to discern that the varying steady-states, and the degree of their derangements in individual patient circumstances, can combine and interact to drive dramatic and possibly chaotic changes in the overall entropic descriptions of an Emergency Department and hospital. This may feedback on institutional responses, which include the spatial and temporal relations between human, intellectual, technological and ethical resources in an Emergency Department, formed in the biomedical paradigm as a response to suffering.

In terms of complexity, the system described is capable of dynamic energetic fluctuations of an order that conceivably precipitates the necessary physical conditions for phase-changes. Phase-changes in complex systems are inherently unstable, and in systems as complex as health-care may involve chaotic bifurcations and transitions, analogous to the observations by Gaspard:

An example of such nonequilibrium behavior is the Rayleigh-Bénard hydrodynamic convection of a fluid in a gravitational field and in an inverse gradient of temperature. As the gradient increases, the thermally conducting steady state becomes unstable and steady convective rolls are generated. The rolls lose their stationarity to become periodically oscillating after a Hopf bifurcation [self-excited oscillation]. These oscillations may then become chaotic after further bifurcations. Many observations have shown the remarkable fact that the number of dynamical variables remains finite in these chaotic regimes. Indeed, such nonperiodic behavior is possible in a continuous-time system with at least three dynamical variables.

In fluids out of equilibrium, the number of dynamical variables increases with the nonequilibrium constraints and the fluid enters into turbulence, which is a high-dimensional chaos. In turbulent regimes, the fluid motion is so unstable that chaos appears on several spatial scales.[573]

If complexity of this order exists in human relations, it introduces fascinating new possibilities for theoretical physical mechanisms within the causal configurations of human systems of encounter in hospital Emergency Departments. These mechanisms would be based on inferences from thermodynamic, complex, non-linear physical systems at other scales of the universe. In the context of open systems, the reversal of entropy is possible within a localised relative phase-space, such as the human organism, because at a larger scale total entropy production remains positive. Irreversible processes, including the action of dissipative structures, can over time balance metabolism and entropy production, but in the setting of rapid rates of entropy production, such as in suffering, there may not be enough time to re-establish the steady-state. Instead, intentional non-random injections of carefully calibrated energy may be required to 'nudge' a

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[573] P Gaspard, "Chaos, Fractals and Thermodynamics", *Bulletin de la Classe des Sciences de l'Acad´emie Royale de Belgique* 11, no. 6 (2000): 9-48.

disorganising system back towards its steady-state. This includes the introduction of the doctor into the suffering of the patient.

Characterising Emergency Departments in a complex organisation of this nature may shed much-needed light on the ways in which the system of the Emergency Department might be influenced to achieve its goal of relieving human suffering. Mechanisms that may achieve this are discussed in later sections.

5.4 Second Order Construct 3: Caseness

Construct Statement: Caseness is the intuited and intellectual identification by a doctor of the 'place' of their patient in the complexity of the biomedical paradigm, defined in the encounter by signs, symptoms, history and touch. Caseness forms a powerful approximation for the initial conditions for the patient-doctor relationship and the trajectory along which the relationship may unfold.

Minds may now turn, with clearer understanding of the phenomenological grounding of the energetic foundations of the clinical encounter, to one of the most important conditions identified by the participants for a successful outcome in the patient-doctor relationship: the identification by the doctor of the place of the patient in the biomedical paradigm. I will deem this the definition of 'caseness'.

I would first like to explain that I am not, in the subsequent considerations, subverting or dismissing the immense knowledge of the self that patients have for understanding their experiences of suffering. By this I mean that I am well aware, from my own clinical practice and the research literature, that many patients can have a very good grasp of the cause of their suffering and the pathway to its resolution. However, when a patient is so sick that they make a decision to attend an Emergency Department, the implicit requirement for success is that the hospital delivers the required energetic inputs and transformations to allow for recovery. It is suggested in the Second Order Construct 2 that the quality of information exchange is critical to the success of lowering entropy through increased knowledge of the subsystem of the clinical encounter. For the vast majority of, if not all, patients, this recruitment of resources will be mediated by a doctor.

In the context of the positioned-practice of 'patient' and doctor', the critical realist perspective allows for variability in the capacity and ability of different agents within those positions who actualise the causal powers imbued within the position. So naturally, a patient whose information quality is very high could significantly increase the efficiency

with which the doctor makes sense of their suffering. Equally, a poorly performing doctor, even with a well-informed patient, may yet undermine success in recovery. In either situation, because of the causal powers vested in the doctor to recruit and enact the transformative energy potentials of the hospital Emergency Department in service to the patient, the situation is reliant upon the physician to activate the necessary energetic transfers. Hence, I acknowledge the profound and essential contribution of the patient to their own recovery, but assert that for the fulfilment of this recovery in the main in an Emergency Department, a physician will make an assessment of 'caseness'. From this point on in this inquiry, it is taken as given the critical role of the patient in defining their own caseness.

5.4.1 Suffering calls the self to the Other

Before detailing 'caseness', further elucidation of the calling to the suffering of the patient by the doctor (and by the social institution of the hospital, for that matter) is useful. In the phenomenological tradition of Lévinas, he argues for an *a priori* condition of 'responsibility' that exists in the relations between patient and doctor. He writes:

> *In [Otherwise than Being] I speak of responsibility as the essential, primary and fundamental mode of subjectivity. For I describe subjectivity in ethical terms. Ethics, here, does not supplement a preceding existential base [as Heidegger would have it]; the very node of the subjective is knotted in ethics understood as responsibility.*[574]

The 'knot of subjectivity' is an infinite loop that binds the self and the Other through responsibility as a mutuality, in the instance of the patient-doctor relationship, of concern of the patient for the doctor, and of the doctor for the patient. In the Lévinasian worldview, the clinical encounter, as with all encounters of one person with another, is the manifestation of, and only made possible by, the condition of responsibility. In critical realist terms, responsibility is both a tendency of the nature of the causal configuration emerging from suffering, as well as a mechanism for the actualisation of the causal powers of patient and doctor.

In some respects it is only under the conditions of an ethical knot of such sorts that the initial conditions of a clinical encounter can be adequately apprehended, because suffering alone may not fully inform the recovery of steady-state. This is because suffering is the transcending signal of entropic decay and loss of knowing. It is amenable to generalities of recovery such as compassion, empathy and succour, but if solely relied

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[574] E Lévinas, *Ethics and Infinity: Conversations with Phillipe Nemo,* R Cohen tr. (Pittsburg: Duquesne University Press, 1985), 95.

upon to define the trajectory of recovery, it may, for the most part, be inadequate in arresting the physico-physiologico-psychic derangements leaking energy into the infinity of the surrounding environment. By the earlier definition, suffering may declare a material reality of an overwhelm of the patient's internal homeostatic capabilities, which augurs a failure of informational integrity of and about the system.

Gnosis, an antidote to informational entropy in the clinical encounter, is illuminated by a broader substrate of phenomena beyond the condition of suffering. In the biomedical paradigm, approximating a link between the physico-physiologico-psychic derangements expressed by the patient and the body of knowledge of biomedicine presupposes a causal reality. That is, specific signals of derangement (signs and symptoms) are localisable to a physico-physiologico-psychic derangement for which there are specific energetic interventions designed to arrest continuing decay of the affected embodied systems. In many instances the empirical approach has rendered tremendously powerful methods for the restoration of steady-state based on this logic. This is predicated on a model of adequate approximation of the information expressed by the patient for its specificity and sensitivity to the constellation of signs and symptoms auguring a particular pathological state. In psychiatric parlance this is typically described as caseness,[575] but there is no particular reason that we cannot extend this characterisation to medicine more generally.

5.4.2 Defining caseness is complex not categorical

In this characterisation, suffering calls the doctor towards defining the caseness of the patient for biomedical relief. *How* a doctor defines caseness is a matter of intense and long-term research.[576] Szolovits and Pauker assert that medical reasoning for the purpose of diagnosis, one of the outcomes of defining caseness, typically falls on a spectrum between categorical and deterministic reasoning at one end, and probabilistic evidential reasoning on the other.[577] Their analysis of observed physician diagnostic methods and artificial intelligence (AI) models suggest that both ends of the spectrum are required, but operate at different times and layers of the diagnostic process. They make a particularly apropos postscript observation that their medical colleagues at work:

are often extremely reluctant to engage in any numerical computation involving the likelihood of a diagnosis or the prognosis for a treatment. Even when official blessing is bestowed upon Bayesian

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[575] Oxford Dictionaries, (Cambridge: OUP 2018), https://en.oxforddictionaries.com/definition/caseness .

[576] V Patel, J Arocha and D Kaufman, "Diagnostic Reasoning and Medical Expertise", *Psychology Learning Motivation* 31 (1994): 187-252.

[577] Szolovits and Pauker, "Categorical and Probabilistic Reasoning", 115-144.

techniques, we have seen both experienced and novice physicians acknowledge and then ignore them. Doctors certainly have a strong impression of their confidence in their diagnosis or treatment, but that impression must arise more from recognizing a typical situation or comparing the present case to their past experiences rather than from any formal computation of likelihoods.[578]

The encounter is the very essence of Schön's assertion of what separates technical proficiency from truly masterful expression of professional expertise: the reflection-in-action and reflection-on-action of technical expertise applied in novel and uncertain individual instances. He argues that:

Technical rationality fostered a separation between research and practice. Research of the kind that was viewed as proper to the 'higher schools' — rigorously controlled experimentation, statistical analysis of observed correlations of variables, or disinterested theoretical speculation — finds little place to stand in the turbulent world of practice, which is notoriously uncontrolled, where problems are usually ill-formed, and where actors in the practice situation are undeniably 'interested'. The consequence, stronger today than ever, was that the research produced by the 'higher schools' seemed to have little to say that was of value to practitioners.[579]

Though Szolovits and Pauker are actually lamenting the failure of physicians to apply useful probability heuristics in situations where they are quite appropriate, both acknowledge that formal systems like AI are not yet, if ever, capable of the mixed aggregation of appropriate and measured uses of categorical and probabilistic decision models that underpin human decision-making. Furthermore, they confirm that formal probabilistic Bayesian models are so data hungry that even for a relatively simple differential diagnosis list of ten possibilities involving five diagnostic tests, the mathematics would generate an impossible-to-calculate list of 63,000 conditional probabilities to be assessed.

This is not to underestimate the stunning ability of human neural networks to make decisions. Very fast decision speeds can be viewed as the result of a hybrid of categorical and probabilistic functions of neural networks, with a bunch of assumptions and shortcuts that make a decision possible within the time-scales of normal neurone activity.[580] An-oft cited model in medical decision-making is hypothetico-deductive reasoning, whereby the physician arrives at multiple possible diagnoses and, by way of elimination through history, examination and investigation, attempts to refute or confirm one diagnosis over another.[581] This is achieved in the time-scale of normal activity.

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[578] ibid. 144.

[579] D Schön, "Knowing-In-Action: The New Scholarship Requires a New Epistemology", *Change* 27, no. 6 (1995): 27-34.

[580] J Hopfield and D Tank, " 'Neural' Computation of Decisions in Optimization Problems", *Biological Cybernetics* 52 (1985): 141-152.

[581] G Norman and L Dolovich, "Iterative Diagnosis", *BMJ* 339 (2009): b3490.

While this describes a now well-validated process, it says nothing of the underlying ways in which such processes are carried out in the doctor's living substance.[582]

Other research suggests a more inductive process whereby the apperception and apprehension of the patient's signs and symptoms, and the outcomes of investigations, are assimilated with internalised schema or scripts and tested for correlation. This model further describes how each clinical encounter represents an instantiation of a pre-formed script to which the physician ascribes actual values to the attributes of the script, from which a correlation is derived.[583]

Such a model more closely resembles the 'dance' of the clinical interview, in which the patient and doctor exchange information, not in an *a priori* vacuum of expectation, but rather in an intense intentional focus on the relief of suffering through the apprehension of the origins of the suffering and its ameliorates. Often the doctor takes the lead, with an intentionality informed first by the doctor's initial visualisation of the patient and all that this communicates, triggering various scripts, and later as the doctor anticipates the relevant attributes of competing scripts to which values are applied and the testing and retesting of correlations with differential diagnoses continues.[584]

Whatever the means, defining caseness can feel something like the gnosis described by Baader, cited above, with its sense of apprehension of a circle of totality of knowing arising from the centrum to which the parts of the web of ideas point, not bit by bit, but as a whole knowing, and from this centrum outwards to each idea as it is related. At present there are no technologies to peer inside the component structures giving origin to script activation or any other model of diagnosis. Phenomenologically, however, the concept of script activation might be amenable to inductive reflection and subsequent exploration at another time.

Evidence from the First Order Constructs suggests that in the perceptions of the participants, the safety of the patient is predicated upon the physician's sense of control over the clinical situation, and the encounter's context in the Emergency Department. *Ipso facto*, the doctor's sense of understanding — their gnosis — of the system of

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582 B Charlin, J Tardif and H Boshuizen, "Scripts and Medical Diagnostic Knowledge: Theory and Applications for Clinical Reasoning Instruction and Research", *Academic Medicine* 72, no. 2 (2000): 183.

583 ibid. 183-184.

584 S Lubarsky et al, "Using Script Theory to Cultivate Illness Script Formation and Clinical Reasoning in Health Professions Education", *Can Med Ed Journal* 6, no. 2 (2015): e61-e70.

interacting parts will influence how safe they feel their patients are in the department. A state of gnosis is an expression of lower entropy as there is substantial useful information available to the physician on the organisational state of the clinical context. A 'sense of control', arising from gnosis, precedes an evaluation of the patient's safety. The doctor's concern for the safety of the patient can be understood, via the Lévinasian knot of responsibility, essentially as a statement about the doctor's own sense of safety.

Expressing concern for the patient's safety as a displacement or continuation of one's own sense of safety can be characterised in psychodynamic terms as *projective identification*. Projective identification describes a form of ego defence that directs a person's emotions and associations, which are a source of danger to internal coherence, towards external objects in order to assert control over them.[585] There were clues for this scattered among the interviews with participating doctors. Certain doctors described responses to threats to their sense of safety in terms of power relations with colleagues. Others described psychological withdrawal into clinical scenarios in which they exerted professional expertise that reassured them of their control. Another described more neurotic responses of obsessionality and rumination about patients and their outcomes, through which they attempted to establish an intellectual and emotional control over their uncertainties.

This combination of narcissistic and neurotic defences is not incompatible with eventual transition to more mature and adaptive defences including humour, sublimation and altruism. It is interesting to consider how these less mature defences might influence the processes of script activation and assessment. There is evidence that the unconscious processes of script activation may become vulnerable to 'biases' which impact on the values assigned to the various attributes of the activated scripts.[586] These biases arise from conditions such as 'over-confidence', 'emotional dispositions', and a doctor's response to interpersonal dynamics at play with colleagues in an Emergency Department and with the patient, which form over repeated exposure to the triggering phenomena.[587] For example, a doctor feels the need to be free of the burden of care for a patient who has caused them some emotional discomfort, and so forestalls critical reflection on

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[585] R Waska, "Projective Identification, Countertransference, and the Struggle for Understanding over Acting Out", *J Psychother Prac Res* 8, no. 2 (1999): 155-161.

[586] K Buckley and C Anderson, "A Theoretical Model of the Effects and Consequences of Playing Video Games", in *Playing Video Games - Motives, Responses, and Consequences,* eds. P Vorderer and J Bryant (New York: Routledge, 2012), 363-378.

[587] P Croskerry, G Signal and S Mamede, "Cognitive Debiasing 2: Impediments to and Strategies for Change", *BMJ Qual Safe* 22, no. S2 (2012): ii65-ii72.

diagnostic hypotheses in favour of early cognitive closure and confirmation biases which over-value and under-value different attributes of concern, so that caseness can be applied and 'the problem' taken away.

'Caseness', thus, is potentially vulnerable to all manner of internal and environmental influences that can degrade, or improve, the doctor's approximation of the place of the patient's presentation within the biomedical paradigm. In terms of the essential action-oriented nature of the clinical encounter, aroused out of the suffering of the patient and the essential self-Other ethical knot of responsibility formed in the clinical encounter, the trajectory and end-state of the encounter relies significantly on the contribution of caseness to the definition of the initial conditions. Caseness emerges as one of the essences of the clinical encounter in its irreducible contribution to the meaning-making of the encounter. Caseness is that which is *given* to the clinical encounter in the informational dimension of the encounter. It asserts direct relation to the entropy of the system as a mechanism for the coming together of patient and doctor within the causal configuration of the clinical encounter. Caseness accounts for doctor-given causal powers such as mental scripts held in foreknowledge and awaiting their trigger, and the patient-given causal power to draw care towards them through the descriptors and signifiers of interoceptive apprehension of the deranged life substances. Ethically, patient and doctor are tied by suffering in the knot of responsibility of self-Other, which commands definition of caseness in the biomedical paradigm.

Caseness is an *a priori* condition to the realisation of relationship between the patient and doctor, expressing the special alterity of each and the informational potential of the encounter. There are inherent vulnerabilities for both actors: for the patient, in the incomplete knowledge of self-suffering; and for the physician, out of the fragility of their performative expression of expertise and its unconscious mental origins. Without caseness, we have an encounter of some other description but not that of a *clinical* encounter. Though this special encounter is energetically open to the causal configurations of the systems and environment surrounding and containing it, it is signified and privileged with communicative exchanges that take place in no other conditions.

The suffering of the patient, in this framing, is contingent on the performance of the doctor. The doctor's performance is contingent on the expressed generalities of compassion, empathy and succour, and to the specifics of non-random energetic

injections aimed at the relief of the various derangements activating suffering. All of this is informed by the success or otherwise of the doctor's characterisation of caseness. Caseness can accentuate and intensify the ethical moment between patient and doctor, creating a powerful force which on the one hand threatens to annihilate in death or in the grief of unrequited suffering, but on the other may precipitate expression of the noblest heroism to be found in human histories.

The clinical encounter contains a moment in which we may discover the best and worst of ourselves as patient or doctor. For the doctor it is a space in which the ego of their psychic world may find relief (or torment of the masochistic kind) through the entropic exchange of information, or the acting out of powerful defences that restore a self-sense of safety and meaning.

5.4.3 Time-based targets directly affect the space-time of caseness

It is not so surprising to have heard from all the participating doctors a jaundiced, and even violent, reaction against the impost of an arbitrary time constraint in hospital Emergency Departments, when one considers the possible connections between the suffering of the patient and the self-sense of control that the encounter with this suffering may stimulate in attending physicians. Doctors' performative success is deeply tied to their success in defining caseness, and the consequences that flow to the patient and their relief of suffering. In settings where an arbitrary time constraint thwarts or degrades this opportunity for success, it is not surprising that this constraint is met with derision and scorn, given that it may imperil the sense of safety of both patient and doctor.

One cannot underplay the severity of the condemnation expressed by all the doctors of the 4-Hour Rule. In exploring the evidences for the essence of caseness, consideration has been given to some of the internal and dynamic factors through which time may impact on existential potentials within the clinical encounter. Important motive forces and flows operating in the causal configuration of the clinical encounter, such as the drive to relieve suffering and the *a priori* Responsibility of self-Other, are, by virtue of their originarity in entropy, sensitively vulnerable to imposed time-dependent constraints. The arrow of time, a fundamental macroscopic phenomenon of entropy,[588] manifests

[588] V Capek and D Sheehan, *Challenges to The Second Law of Thermodynamics: Theory and Experiment* (Dordrecht: Springer Science & Business Media, 2006), 5.

consequences in the material world arising from (a) suffering and (b) responsibility, that draw out actions typically intended to arrest the former as a virtue of the latter.

The trajectory of the encounter through time is influenced by these actions in the material world, actions that are themselves susceptible to manipulations of the time-dimension because of this time-entropy relation. Time constraints impose arbitrary boundaries for the contact of the two complex non-linear dynamical positioned-practices of patient and doctor, in which there is a strong likelihood of an already established high rate of entropy production. Each system, patient and doctor, generates its own internal entropy that will likewise confer its own time-related demands. The bleeding patient cannot bleed indefinitely. Success of the clinical encounter in restoring health and wellbeing *is* time-dependent because of entropy. The injection of non-random free energy must stabilise or 'reverse' entropy production if a steady-state is to be realised again. However, manipulating the time-boundary of contact without regard for the internal time-dependencies of the 'natural' entropy production may have severe consequences to the stability of the operation of the dynamical forces and fluxes within the complex manifold of lifeworlds, if it interferes with the rate and quantum of metabolism of free energy within the clinical-encounter manifold.

In addition to consequences in metabolic domains, the psychic domain of patient and doctor is an important source of 'negative entropy' production that stabilises and directs the trajectory of the clinical encounter. If within the encounter there is insufficient information about the state of the system, for example incomplete caseness, then a sense of a loss of control and rising danger ('un-safety') may materialise. Imposed time constraints may impose or sustain inadequate information acquisition: a state of higher entropy. The accumulation of higher entropic conditions within the medical professional will require metabolism at some stage if they are to be restored to a successful steady-state. Failure to do so can be expected to affect a range of material processes and mechanisms within the doctor's living substances, some of which, like the brain, are highly likely to be critical to the performance of the patient-doctor relationship and its manifestation of gnosis as an antidote to the life-threatening rate of entropy production in the suffering patient.

5.5 Second Order Construct 4: Clinical Equipoise

Construct Statement: Clinical equipoise is the immediate, visceral and evocative response to a clinical encounter in which caseness, intervention, management and resolution are grasped in their totality and recognised for symmetry, efficiency, balance and effectiveness. This is a distinctly carbon-based logic output in response to the world, signalling a unification of sensory impulses, intelligence, and intention-of-self-and-other in the moment.

In biomedical research, clinical equipoise refers to the ethical basis of genuine uncertainty of the effectiveness of a treatment as justification for randomising treatments in a clinical study.[589] However, in the generic sense, equipoise has for at least two centuries connoted a balancing of forces such as mass or energy, or even logic, including in dynamic settings.[590][591] In these latter definitions, equipoise might be conceived of as a particular instance of *gnosis* in which there is a totalising experience or encounter with some form, object or circumstance that signals recognition of a set or structure of relations that are in least dissipation and tending towards orderliness and away from disorder. Hence, clinical equipoise would express the condition in which gnosis grasps a unique moment of least dissipative organisation of the physico-physiologico-psychic state of the patient and the biomedical frame of reference in which health-care knowledge and action (caseness, treatment etc.) occur. It is a concept closely allied to the experience of elegance.

Elegance is used to describe such divergent phenomena as mathematical theorems, surgical performance, dance and the interior design of a room. Sapolsky, a neuroscientist at Stanford, is quoted as responding when asked about scientific elegance, "you know it when you see it".[592] Here lies a phenomenological clue — elegance is less about a 'what, who, when, where and why' analysis, and much more about an immediate and totalising response of the observer to whatever has presented itself in the givenness of that which is encountered.

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[589] B Freedman, "Equipoise and the Ethics of Clinical Research", *NEJM* 317, no. 3 (1987):141–145.

[590] S Rigaud, *Essay on the System of the Earth* (Oxford: Radcliffe Observatory, Oxford University, 1815).

[591] A-T Tymieniecka, *Impetus and Equipoise in the Life-Strategies of Reason: Logos and Life, Book 4, Volume 70 of Analecta Husserliana* (Dordrecht: Springer Science & Business Media, 2000), Part II S3.

[592] P House, "What is Elegance in Science?", *The New Yorker* (Aug 17, 2015), available at http://www.newyorker.com/tech/elements/what-is-elegance-in-science .

Elegance expresses a universality that May describes as offering "the simplicity Holmes would die for, the unifying beauty Keats refers to, and the symmetry Knuth advocates".[593] It is perhaps not uncommon to see elegance described in such poetical terms. Each of the three people invoked by May expresses one of the "virtues and dimensions" of what we might consider elegant.[594] In the case of Holmes, a US judge, he is said to have marvelled at the elegance found "on the other side of complexity"; for Keats, it is the tension and mystery of the meaning of truth and beauty in the *Ode to a Grecian Urn*; and Knuth expressed the ideas of symmetry and form in algebraic geometry.

Phenomenologically, elegance is about what is absent as much as what is present. Rota eloquently describes, in his treatise on the beauty and elegance of mathematics, that this absence is not necessarily an absolute absence, a nothing. Instead often, at least in his estimation of mathematics, the beauty and elegance of a mathematical theorem is that it creates a moment of enlightenment which totalises all the long and difficult theoretical contexts from which the beautiful theorem or proof arises.[595] He observes that while the 'truth' statement of the theorem might be grasped by the student, its beauty and elegance may only be apparent to those who understand from what complex and difficult histories the solution has arisen. Elegance in this context is, again, a totalising phenomenon, something only grasped when the hard work of understanding the context and minutiae of its place in the world has been done beforehand. The theorem's elegance might be described as being found in its representation of 'the truth' in the absence of all the other long and difficult-to-comprehend information going before it.

This sense of elegance as an essential-in-absence can also be found in the study of dance. In classical ballet, a prized expression of mastery for the dancer is the achievement of movement *en pointe*, where the whole body is lifted and balanced on the points of the toes. The position seeks to evoke 'weightlessness'; in the one instance there is the obvious givenness of the mass of the dancers body, but in the same moment it is given to perception as if it is weightless, through the reduction to its minimum of the contact between body and Earth.[596] Not only must the dancer achieve the position, it is essential in the full expression of elegance that their movements are only those required, nothing

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[593] M May, *In Pursuit of Elegance: Why the Best Ideas have Something Missing* (New York: Crown Publish Group, 2009), 33.

[594] ibid. 11.

[595] G Rota, *Indiscrete Thoughts*, ed. F Palombi (Boston: Birkhäuser, 2000), 129-133.

[596] J Barring and S Schlesinger,*The Pointe Book – Shoes, Training and Technique 2nd Ed,* (Hightstown: Princeton Book Company, 2004), 1–8.

extraneous, to move from one position to the other in balance with the musical score and emotional valence of the story.

The experience of elegance points to something fundamental about our sense organs and their unification in the substance of our nervous and other living parts. As described above, elegance is an intuited pre-reflected whole. It is an excitation of our livingness that initially subdues or avoids our intellect, and unifies self with the other-object. It is both that which is given from and through the other, and that which is only known when the knowing of other and self are held together. It draws out or shocks out of self some pre-knowing of the whole, as a symmetry, a balance, or an essentialness in relationship to that which is being communicated. It is the recognition in the other of our self-same unitary completeness as objects of and by the universal substance from which the self and the Other are given form. Elegance in this sense is *re-cognition* and non-cognition, where thought is provoked *and* momentarily suspended by the overawing knowing of being-in-presence of a perfected presence and absence in its particular evocation of a truth.

In this characterisation, we can know elegance because it is a fundamental law of our very substance. Arguably, Poincare's work in mathematical spaces gives us some insight into how we might begin to formulate the idea of this knowing of elegance as a function of our living being. His work contributed to the emergence of the concept of 'phase-space'. He discovered that certain mathematical solutions did not present as a singular optimal solution within a space, but instead multiple optimal solutions existed together, a discovery which uncovered the solution for rhythmic natural processes recurring over and over again (periodic systems).[597]

Beyond Poincare's work, Weirestrass would lay the foundations for the discovery of 'mathematical monsters', many of which were later defined by Mandelbrot as fractals, by showing that it was possible to have rates of change that could not be derived from classical calculus because they had no smooth edges, but rather were jagged.[598] Mandelbrot's genius was to notice that certain groups of these jagged functions had repeating patterns of short segments that appeared self-same over scales indefinitely.[599] It appears that in order to avoid random wandering across a phase-space, the universe of

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[597] M Delanda, "Material Elegance", *Architectural Design* 77, no. 1 (2007): 21.

[598] A Kucharski, "Math's Beautiful Monsters: How a Destructive Idea Paved the Way for Modern Math", *Nautilus* 11 (Apr 3, 2014), available at http://nautil.us/issue/11/light/maths-beautiful-monsters .

[599] P Jones, "Foreword", in *Fractals and Chaos*, B Mandelbrot (New York: Springer-Verlag, 2004), ix-xii.

phase-spaces is filled with 'attractors', including fractals, the existence of which increases the probabilities of certain states occurring within the phase-space. Though individually deterministic, in systems involving multiple attractors these attractors combine to form probabilistic functions for the emergence of a set of orderly trajectories.[600] The material substance of neurones has been described as a special example of a 'self-sustaining oscillator' imbued with periodicity and a capacity to synchronise individual rhythms across millions of individual cells and units of cells.[601] Such orderly trajectories are the implied foundation for architectural elegance proposed by Rahim and Jamelle, who observe that:

Elegance mediates and enables complexity. A tightly controlled, precise refinement in technique is required to mould transformative surfaces that incorporate distinctly topographical features.[602]

The human living substance is a universe of phase-spaces over different scales defined by an *hierarchy*, in which the attractors and controllers of different phase-spaces are tied together so that the whole organism is, from cell to organ to whole, an integrated and coherent manifestation, or *holon*.[603] Rather than deterministic machinery, the living substances of organisms are filled with the periodic, oscillatory cycles and motions of elegant and complex interlinked scales across phase-spaces.[604]

5.5.1 Elegance may be a totalised experience

One can now imagine that elegance can be thought of as a special kind of description of phase-spaces where the singularities and probabilities of relationships of attractors are experienced as a resolved, least dissipative expression of all possible trajectories. This is part of the conclusion suggested by Sprott on quantitative methods for searching out elegant proofs and equations in non-linear chaotic phase-space possibilities.[605] Sprott suggests, like Salposky, that outside of a quantitative description (which he offers), elegance in mathematics is 'in the eye of the beholder',[606] a phenomenological experience of recognition without obvious definition beyond the object's essential absences and

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[600] A Kunert and F Pfeiffer, "Description of Chaotic Motion by an Invariant Probability Density", *Nonlinear Dynamics* 2 (1991): 291-304.

[601] T Ueta and G Chen, "On Synchronisation and Control of Coupled Wilson-Cowan Neural Oscillators", *Int J Bifurcation and Chaos* 13, no. 1 (2003): 163-175.

[602] A Rahim and H Jamelle, "Elegance in the Age of Digital", *Architectural Design* 77, no. 1 (2007): 6-10.

[603] A Scott, ed., *Encyclopedia of Nonlinear Science* (New York: Routledge, 2006), 421.

[604] W Bechtel and A Abrahamsen, *Complex Biological Mechanisms: Cyclic, Oscillatory, and Autonomous*, in *Philosophy of Complex Systems*, ed. C Hooker (Oxford: North Holland, 2011), 278-282.

[605] J Sprott, *Elegant Chaos: Algebraically Simple Chaotic Flows* (Singapore: World Scientific Publishing, 2010), 37-40.

[606] ibid. 37.

relationship to the actuality of the material world. We can characterise this as a state of least dissipative energy, just as Sprott suggests we will tend to find elegant proofs when state-space finds stability around attractors in a complex system.

Elegance seems to have 'a point'. It is not only a function of the operation of a particular system among many possibilities, it is related to something intended by the observer, born of an *a priori* capacity to be experienced and recognised. This is perhaps more understandable if one considers a situation in which elegance is observed, but in a system in which it was perhaps not actually designed:

When you look more carefully at the actual biology, at what genes are expressed, when and how, nature often misses the boat. A good example of this is the dozen or so alternating 'stripes' that you see early in fruit fly development. For years, mathematicians and computer scientists have been showing you could build the whole schmear using Turing's elegant reaction-diffusion mathematics. But even though the computer models seem impeccable, nature just doesn't build the fly that way; instead, it turns out that each of the fly's stripes is coded for by a different combination of genes. What seemed elegant on the outside is actually hard-coded internally a really clumsy way. Natural selection is a meliorizer, a process that makes things better, not an optimizer, which makes things as good as they can be... We must blend elegance with happenstance.[607]

It is beyond the scope of this inquiry to more deeply examine the possibility that there is, indeed, a correlation between the elegant reaction-diffusion equations and underlying genetic phenomena. Rothenberg's anecdote from Marcus, cited above, is reminiscent of the observation by Rota that for every beautiful theorem in mathematics there may be many 'ugly' and turgid proofs of the theorem and often only sometimes proofs that are themselves also elegant.[608] Hence, the material reality of a phenomenon may be explained in terms that are more or less elegant depending on the perspective of the observer.

Rota and Marcus confront us with an interesting dichotomy expressed in two different ways. In the first, there is the issue of elegant theorems with inelegant proofs; and in the latter, an elegant macroscopic conclusion based on inelegant microscopic origins. The resolution in both cases hinges on our preparedness to accept that a totalising expression of a phase-space of multiple singularities remains valid in the face of a set of dissected underlying realities that may be in themselves messy, incompletely described or unavoidably 'ugly'. Our totalised experience can be an experience of elegance in every sense of its given presence-absence-intention relations despite the reality that observation

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[607] D Rothenberg, *Survival of the Beautiful: Art, Science, and Evolution* (London: Bloomsbury, 2013), 96. Citing a personal communication with Professor of Psychology, Gary Marcus, NYU.

[608] Rota, *Indiscrete Thoughts*, 129-133.

or consideration of any partial element of the system may itself be inelegant. An example of the elegance of totalised apprehension is found in the fractals first described by Mandelbrot, which at one scale may appear initially broken or interrupted and inelegant, but which at a different scale can be shown to exhibit elegant repeating patterns based on simple mathematical formulae that, for reasons still unclear, human sensory aesthetics gravitate towards.[609]

While the participating doctors did not use the specific term of elegance, several times they raised examples of when 'things go right' in the Emergency Department. They communicated a self-satisfying feeling often associated with participation in a shift in which the system seemed to work effectively. Thermodynamically, this might be considered an instance of the recognition and sense-making of a least dissipative process of workflow. The doctors' expression of these moments was evocative of something more elaborate than just 'efficiency'. They expressed a deeper sense of meaning-making, something that expressed an individual achievement in concert with, and in support of, a complex system in which there is foreknowledge of the potential for very different trajectories — including trajectories closer to chaos and disorder (i.e. death and disability, and failure). Their meaning-making was tinged with qualities of relief and elation.

The doctors' descriptions evoked a sense of mastery at work, where the final meaningful outcome wholly rested on having brought a sense of meaningful service to the patients they had treated. The drive towards mastery, to professional fulfilment of the highest potential of their clinical skills and knowledge, was most poignantly described by Participant 1, who said, *"I don't think patients and the hospital, and other than doctors in the hospital, actually realise the extent to which we take patient care really seriously and that a lot of ED burnout is around not being, not feeling, you are able to do a good job for that person. And living with the mistake"*.

The doctors used words and inflections that communicated *feelings* in relation to when things go right (and wrong). They did not use technical jargon or describe intellectual satisfaction with correlations between their working diagnosis and the final technical outcomes for patients. It was 'care', a totalising idea of the many permutations and potential combinations of how, when and where resources were brought into service to restore some sort of steady-state for their patient, and thus relieve their suffering. The participants' sense of when things go right was built from their feeling-state of the

[609] May, *In Pursuit of Elegance,* 43-52.

success with which they allied with the patient, framed the problem, resourced a solution, and resolved the patient's suffering — all encompassed in a conscious awareness of the context of the Emergency Department in which the outcome took place. As Participant 4 noted:

Yeah yeah yeah, right, so every day if you're on the hospital email list you get this email [about the 4-hour target]. Well we had one where it was like, 'oh... yesterday we got... 85%'. I think like in the whole year they got it once, or like 80% or whatever. And it was like, and one of the managers in the mental health unit said, 'Well done, apparently mental health got 100%'. We had two patients. I felt like going, how many days do we have two people present over the whole thing you know. You know that is fucking retarded that the one day we have two, how do you expect us to do that with 12, you know?

All four doctors articulated some variation of what Argyris and Schön described as the 'felt-knowing' of reflection-in-action,[610] akin to the idea of an intuited pre-reflected presence-absence-intention relation of elegance. The participants' descriptions and affective states communicated a sense of lived mastery in the service of their professional abilities to bring about meaning and understanding and a relief of suffering for the patient. Perhaps, then, in the clinical encounter elegance expresses a unified state of felt-knowing in which interoceptive, cognitive and emotional sensibilities converge with the material phase-space of encounter towards a conclusion of a least dissipative solution to the world of suffering being recognised and experienced. This is at its core the unification of elements within a dynamic setting of alternative possibilities which may convey a new definition of clinical equipoise as gnosis in a totalised experience.

This characterises clinical equipoise as an essence of self-other unification, perhaps the Lévinasian knot of self-other responsibility, mediated through the complexity of the clinical encounter and its context in the oftentimes messy and chaotic environment of the Emergency Department. Elegance connotes achievement of intended goals via one of perhaps only a small number of potential trajectories that share a common possibility of expending the least energy. These trajectories land patient and doctor close to their shared ethical imperative of the resolution of suffering, which in thermodynamic terms is a steady-state of manageable entropy.

In the biomedical paradigm, the phenomenon of clinical equipoise exists because there is a foreknowledge that alternative calamitous or highly entropic potentials exist as outcomes that might unfortunately be encountered. Hence, the absence of chaos or disorder lends a sense of elegance. Elegance can emerge from phenomenological

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[610] C Argyris and D Schön, *Theory in Practice: Increasing Professional Effectiveness* (San Francisco: Jossey-Base Inc., 1974), 58.

experience because of the embodiment of forms of elegance in one's own living substances. The phase-space of human existence feeds back through unified complex energetic oscillations across hierarchies that, when given to circumstances of totalisation that express elegance, beat in synchronicity, evoking the felt-knowing of elegance and clinical equipoise.

Finding elegance matters because of its impact on the performance of doctors as they themselves have described in the participant interviews. Clinical equipoise, as defined herein, encourages confidence to continue despite the 'bad days', when patients suffer, the system groans under the weight of excess demand, and the individual doctor questions deeply their ability to sustain the psychological and emotional injuries inflicted by their witnessing of suffering. It is more than simply 'getting it right'. It speaks to a greater awareness of, a unification with, the context of every dynamic situation presenting in the Emergency Department and its potential, by virtue of its high entropic state, to deteriorate towards disorder and death. When a person is called on to act decisively in such circumstances, in the full knowledge of the potential for those decisions to change the course of the lifeworld of another for better or worse, elegant performance ensures a symmetry of presence-absence-intention that I can conjecture might reflect the identification of an optimal solution for a favourable outcome and the attainment of clinical equipoise.

In the circumstance of an Emergency Department, however, finding an elegant solution may not be an *a priori* condition known for a given encounter. Instead it may be an emergent phenomenon arising from the clinical encounter as meaning-making unfolds between patient and doctor. There may be uncertainty of the initial conditions in the early stages of defining caseness in the context of the whirling trajectories of lifeworlds making contact in the clinical encounter. This characterisation is not dissimilar, theoretically, to the typical problem of trying to define the relationship of attractors and motions in a chaotic system.[611] It requires time to establish what is being observed and the nature of the motions in relation to the system's attractor components when there is significant uncertainty about initial conditions. Such information is vital because attractors and motions can be used to *control* aspects of the trajectories of the motion of objects in order to nudge them, with greater probability, towards the desired trajectory.[612]

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611 A Daza et al, "Basin Entropy: A New Tool to Analyze Uncertainty in Dynamical Systems", *Nature Scientific Reports* 6 (2016): 31416.

612 K Judd, *Control and Chaos* (Boston: Birkhäuser, 1997), 134-140.

Encouragement is offered in this regard by the observations of Rota and Marcus that underlying the elegant solution may be many imperfect and clumsy realities and potentialities that nonetheless do not diminish the possibility of finding useful elegant descriptions. Elegance is not contingent on perfection but may rather more depend upon the attractors operating within the phase-space of encounter, which are understood to increase the probability of some trajectories over others, and which may favour organisation away from disorder and, thus, lead to a least dissipative state of entropy.

To this end, if a clinical encounter can be characterised as behaving in a non-linear dynamic way, we may, with understanding of what defines the elegance and clinical equipoise of the solution space, have some considerable knowledge about what the attractors and controllers of the dynamic may be. We have established in the Lévinasian worldview that suffering is an essential bonding phenomenon that is preceded by a profound responsibility of self for Other. Given that suffering expresses a high entropic state tending towards greater disorder, we seek a solution in the clinical encounter that tends towards restoring lower entropic accumulation and, thus, reduced suffering. In the biomedical paradigm of the clinical encounter, the ability to inject intentional energy into the disorganising system of the patient, heralded in their suffering, is contingent on the physician's and patient's ability to ascertain caseness, the place of the patient within the body of knowledge of medicine and its technologies. Finally, the temporal relations of the rate of entropic increase, the performance of the physician and patient in defining caseness, and the availability of resources and technologies to arrest entropic forces all impact on the time available to the system to gather information and test hypotheses.

Clinical equipoise is, thus, resolved as a theoretical interplay of non-random presence-absence-intention relations acting in accordance with the thermodynamics of the Second Law in complex systems in which hierarchies of phase-spaces operate towards steady-state at distance from equilibrium, over time. The elegance of the system is perhaps, in this orientation, best understood as the function that brings about a least dissipative energetic arrangement of the various thermodynamic couplings and an operation of effective dissipative structures.[613] The experience of equipoise is not only cognitive. By virtue of the embodiment of sense-making and meaning-making unified within the carbon-based logic structures, one can also *feel* the presence of the elegant solution as a totalising phenomenon.

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[613] J Wang, *Modern Thermodynamics: Based on the Extended Carnot Theorem* (Dordrecht: Springer Science and Media, 2011), 14-15.

If it is accepted that the principles outlined by Rota and Marcus can also apply to interactions between people in complex systems like Emergency Departments, then an attempt to deconstruct something in and of itself elegant may result in the discovery of evidence for what, in the decontextualised perspective, appear to be inefficient, inelegant, or densely and unnecessarily complicated components. This mirrors the appearance of some fractals in nature, where scale changes the capacity to appreciate the beauty and order of what otherwise appear to be chaotic or haphazard fluctuations.[614] There is a danger that the totalised phenomenon might be reduced to its constituent parts with the erroneous conclusion that certain elements need 'fixing' or require reworking. Such a danger should give reason to pause and carefully evaluate the risks of reductionist proclivities to apply certain quantitative standards of research to complex systems of interest, such as experimentation with controlled variables.

If the clinical encounter is not, indeed, a continuous function of interacting elements on a Cartesian plane, experimentation on an intervention using a particular variable may give results that do not reflect the actual relation of the variable to the whole of the system in which it operates. Results may suggest a conclusion for a magnitude of improvement in the operation of the system as a result of manipulating that variable such that a system is redesigned to increase the intensity or value of that variable across the system. This may have the consequence of disrupting important structures of relations and mechanisms through which causal powers are manifesting within the system, thus inadvertently driving an increased rate of entropy, creating a system that continues to tend towards disorder. Such an outcome in the experimental paradigm may be attributed to a 'failure' of intervention rather than its more accurate characterisation as a 'disruption' of structures of relations. Or the outcome may instead be an investment of precious energy into increasing the intensity or value of the variable that, despite appearing to have a strong influence when measured discretely, actually has a relatively small influence over the whole operation of the system, resulting in minimal change to the outcomes of the whole system, and hence creating a waste of invested energy.

In quantitative paradigms, experimenters attempt to control for these possibilities by using regression equations and other multivariate analyses of controlled experiments. However, if the nature of important couplings within the causal configurations have not been properly defined, the logic remains susceptible to incorrect conclusions that ultimately risk a loss of elegance, or indeed the apprehension of false elegance, because

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[614] May, I*n Pursuit of Elegance,* 46.

relationships appear mathematically correct, but are in actuality illusions. Abbott laments the creep of 'mathematical Platonism', born from the "unreasonable effectiveness" of mathematics to build elegant models that approximate the phenomena to which they relate so closely that one can forget the imperfections.[615]

Schön has argued that defining a problem and its solution(s)in a professional setting does not automatically arise from the application of concrete rules and regulations; instead, by virtue of the complexity of the context of a clinical encounter, elegant solutions arise from reflection-in-action and reflection-on-action, each with a necessarily different temporal relationship to the phenomenon of the clinical encounter.[616] Time, where permitted, also allows space for higher fidelity understanding of the dynamics of a complex phase-space. However, it is not a matter of infinite time, because of the inherent unpredictability of the system, its inevitable entropy and the threat this might pose to the patient.

5.5.2 Equipoise is not synonymous with an optimum

However, perhaps one ought to remain curious, and even sceptical, about whether or not the 'elegant' solution is the 'best' solution, mindful that in complex hierarchies of phase-spaces multiple solutions for intended goals can be found. Maintaining doubt keeps the mind open to asking the question 'what if?' and by virtue of this openness one remains capable of learning.[617] Learning improves the efficiency and effectiveness of script activation,[618] which, if as posited in relation to the performance of defining caseness, lends some possibility to the improved performance of a medical practitioner in recognising the patterns of disease in the context of the dynamic changes of a busy hospital department and the doctor's own internal state of being.

If the features described thus far of suffering, medical practitioner performance, clinical encounter and caseness are projected onto a complex thermodynamic performance phase-space as the attractor and controller functions of a doctor's ability to achieve clinical equipoise and predict the probabilities of future histories of that system, one can begin to sketch out a way of making sense of how the force and flow of entropy, and its

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[615] D Abbott, "The Reasonable Ineffectiveness of Mathematics", *Proceedings of the IEEE* 101, no. 10 (2013): 2147-2153.

[616] D Schön, *The Reflective Practitioner: How Professionals Think in Action* (Boston: Arena, 1995), 3-70.

[617] G O'Connell and S Young, "The Neuroscience of Reflective Learning", *Career Development Association of New Zealand The Ezine* 19, no. 4 (2015)

[618] H Boshuizen and H Schmidt, "The Development of Clinical Reasoning Expertise", Ch14 in *Clinical Reasoning in the Health Professions, 3rd Ed,* ed. J Higgs (Amsterdam: Elsevier Health Sciences, 2008), 113-123.

curious relation, time, deeply impact the conditions under which the decisions of health-care are made.

Despite the coherence of these imaginative variations around the entity of clinical equipoise, it remains that within the context of clinical encounter it is not essential that equipoise or an elegant solution is achieved in order to successfully complete a health-care trajectory. There is a corollary between such a state of affairs and the earlier observations of Rota with respect to the inelegance of proofs and theorems in mathematics. The absence of elegance does not result in an absence of mathematical truth about a proof. For example, a doctor reacting to multiple presentations of different illnesses in short succession in an emergency room with an excess of pathology and radiology ordering (and hence not a least dissipative energetic state) may still arrive with their patients on the other side of the individual trajectories with a successful outcome.

So although clinical equipoise may represent an optimised performance trajectory, like the reality of fruit fly development the success of individual clinical encounters is not contingent upon it, and may be a function of less than 'ideal' ways of taking action. In a phenomenological sense, clinical equipoise or elegance is not eidetic to the manifestation of clinical encounter. However, in the context of the total entropic activity in a system, there may be good reasons to consider engineering and performance factors that might at least reduce the risk of excessive entropy production. Adequacy of resourcing, built design, human resources and, especially, time were all factors identified by participants as contextual factors for good performance and good outcomes that may also support more elegant and equipoised performance.

Taking a meliorising approach to these factors, as opposed to optimisation or idealised approaches, may influence the total entropic function of the causal configurations of multiple patient-doctor encounters taking place across a department. Clinical equipoise and the elegant solution may arise from time to time, but an adequacy of performance, spread across the whole system, could be enough to moderate the total system entropy and, thus, avoid a tendency to chaos or bifurcation within the system. Mechanisms and associated causal powers that support optimised solutions may be useful as indicators to inform general system performance, but only where there is adequate understanding of the structure of relations underlying the causal configurations of the Emergency Department.

Meliorising and elegant dynamics are known to exist in natural phenomena at a macroscopic scale, just as fractals in nature show that, with relatively simple guiding rules, it is possible to generate elegant organisation of efficient and orderly matter capable of, for just a few moments in the scale of the universe, achieving the impossible and turning back the tide of entropy.

5.6 Second Order Construct 5: 一期一会

Construct Statement: 一期一会 (Ichi-go Ichi-e) **describes the inimitability of the moment of encounter shared between people, to be cherished as though it were a meeting that may only occur once in a lifetime.**

During my thesis writing, I happened to be asked by a relative to describe what I was researching. In recounting my particular interest in the patient-doctor relationship and its importance in helping to define a pathway to a successful outcome, my relative interjected, "It's like that Japanese proverb thing, where there is only one moment that can never be actually repeated — Ichi-go Ichi-e" [personal communication, 2017]. It was a stunning association to me because it recalled the essential and precarious qualities of some moments during the clinical encounter within which the choices of action take place.

The Second Order Constructs 6 and 7, to follow, are cleaved to this concept of the inimitable moment and will expand on the nature of trust and a model of communicative exchange, which both form critical components of these moments. However, it is worthwhile considering if one can find *Ichi-go Ichi-e* within the clinical encounter.

It is important to assert clearly that the Zen proverb is of particular consequence in formal meetings, such as that of the tea ceremony, and so it characterises encounters of ordained significance within Japanese culture.[619] The corollary between its meaning in the tea ceremony and a clinical encounter are deep and abiding, as illuminated by Sato:

> Ichi-go- Ichi-e — *"One Lifetime One Meeting" — means that each moment is unique unto itself, never to be replicated. In the case of the tea ceremony, the face may be the same, the tea room may be the same, but each gathering is a unique and fresh moment which can never be reproduced. Life is always in a state of flux; that fact combined with cyclical changes such as the seasons make each experience unique. A tea ceremony host should carefully consider every detail in creating a serene and tranquil atmosphere to make the meeting a memorable event. But that event can never be recaptured. The* Ichi-go Ichi-e

[619] P Varley and I Kumakura, eds., *Tea in Japan: Essays on the History of Chanoyu* (Honolulu: University of Hawaii Press, 1989), 187-188.

expression is often also used in conversation, signifying its importance in daily life as well as its universal relevance.[620]

In the clinical encounter one may encounter the same 'face' as the actuality of a returning patient, or the allegory could be broadened to include the same constellation of symptoms and illness. *Ichi-go Ichi-e* calls upon the doctor to consciously put aside this familiarity so that they might allow themselves to encounter the other as if for the first or last time. This condition ought to engender greater seriousness, curiosity and attention towards the other, with the intent of creating a memorable encounter. Notice too, in Sato's description, the quality of periodicity and the arrow of time, both features of a putative model of a thermodynamically informed non-linear dynamic system.

Modern medical practice in some ways demands a similar approach, with an emphasis on 'patient-centred' care, an oft-misused idiom that nonetheless describes the essential need for doctors, in the clinical encounter, to be present in a mindful way to the patient's whole lifeworld as the central motive and concern. Balint was a leading thinker and advocate of patient-centred care and observed:

Illness-centred medicine means that the doctor has to understand the patient's complaints, as well as the symptoms and signs that he can find, in terms of illnesses, that is in terms of a pathological change in part of the body or of a part-function of the body. The danger of this orientation is that it may not give enough consideration to the patient as a unique human being with his own personal conflicts and problems. On the other hand, it must be admitted that this illness-centred orientation, scientific medicine has had spectacular successes, having in fact, almost doubled the average expectancy of life in the Western world during the last hundred years. The other way of thinking, patient-centred medicine, tries to understand the complaints offered by the patient, and the symptoms and signs offered by the doctor, not only in terms of illnesses but also as expressions of the patient's unique individuality, his tensions, conflicts, and problems. We call the understanding based on illness-centred thinking "traditional diagnosis", while the understanding based on patient-centred medicine we call the "overall diagnosis".[621]

This radical reorientation evokes the essential qualities of *Ichi-go Ichi-e* as an expression of what might be characterised phenomenologically as the givenness and given-to of the clinical encounter. One must be receptive to, given to, the singular inimitable moment so that it can be apprehended for its truth, and actions into and out of the moment can be guided by, and express, an authenticity to its uniqueness. With this attitude the distance with which self and other are held is reduced, affirming the living moment of suffering for the patient, and reaching towards that suffering with a healing intention from the doctor.

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620 S Sato, *Shodo: The Quiet Art of Japanese Zen Calligraphy* (North Clarendon: Tuttle Publishing, 2014), 84.

621 M Ballint et al, *Treatment or Diagnosis: A Study of Repeat Prescriptions in General Practice* (London: Tavistock Publications, 1970), 26.

To enact such an encounter through only the artful imitation of tropes and ritual would be reinforcing an untruth; the action becomes a pantomime. The energy transmitted between the actors within the encounter simply dissipates into the ether without any transformative power, thus thermodynamically inducing greater entropic increase, which is the opposite of what the system demands to restore steady-state.

The potential for pantomime was, however, recognised as an inevitable occurrence by the doctors interviewed. They described times where the best that they could achieve was '*going through the motions*' (Participant 1), sometimes due to overwhelming pressures within their personal lives. The doctors recognised that such moments are neither fulfilling nor in the patient's best interests. Instead, the doctors believed that their best chance for providing useful care demanded that they be present to the uniqueness of the patient in front of them and their suffering, as Participant 1 described:

I think that it has to be your driving force. So I think that in the midst of all the rest if you're not getting that bit right and that's not driving you then you can't go on. Because you're gonna feel compromised, you're gonna have, you know, you're gonna have such bad internal conflicts you know. I think for me I have to be driven by that, and even in my other administrative and academic roles I have to be driven by that. And very respectful of that and the people I am dealing with. Um, I think all the rest has to be secondary.

5.6.1 Entropy threatens ichi-go ichi-e

The double-edge of such intense focus is a loss of what one doctor called 'situational awareness' — a concept borrowed from aviation training to describe the ability of a pilot to avoid focussing too keenly on the issue in front of them such that they miss or ignore vital information in the environment that augurs other potential calamity.[622] Successfully shifting awareness between scales (e.g. pathology, patient, department, time) was recognised by the doctors as a feature of mastery on the way to professional advancement and as a skill which is slowly developed throughout training. Argyris and Schön highlight the capacity to reflect upon and within action, which they term reflection-in-action and reflection-on-action, as two of the defining abilities of high-quality performance in professional enterprises. But like all other professional abilities, situational awareness is almost certainly vulnerable to the vicissitudes of the moment, and influenced by factors described by the doctors, including fatigue, burnout, hunger and other stressors.

In addition to these local and personal factors, there are several systemic and institutional processes that threaten *Ichi-go Ichi-e*. The doctors on several occasions described the risks of 'automatic' medicine associated with treatment and management protocols, time

[622] M Endsley, "Toward a Theory of Situational Awareness in Dynamic Systems", *Human Factors* 37, no. 1 (1995): 32-64.

targets, and heuristic biases. Protocolised medical management was believed to increase in frequency when resources became increasingly stretched and was noted to increase the likelihood of over-servicing and unnecessary test ordering. Time targets were frequently identified as driving poor-quality decision-making in which the output (discharge, admission, transfer) overruled thoughtful consideration of the individual circumstances of the patient. Participant 3 described several scenarios in which returning patients or recurrent types of presentations were handled in a thoughtlessly automatic way because colleagues had stopped thinking critically about the unique circumstances of the patient and were instead applying heuristic solutions despite repeated unsatisfactory outcomes.

Based on participant descriptions, 'automatic medicine' appears to arise from conflicts between competing needs, the solutions to which lie in critical analyses of alternative pathways to a range of potential outcomes for managing the competing needs. These demands are almost certain to *increase* energetic demands within the system and may temporarily drive up rates of entropy production. If one applies Marcus' observation that nature can act as a melioriser rather than an optimiser, one might conclude that in many circumstances, instead of creating a system of least dissipative energy (optimisation), strong controllers are introduced into the system to drive the system towards short-term goals (melioriation).[623]

The interviews with the doctors revealed that one of the most important local tensions appeared between their perception of, and satisfaction with, adequate service and care levels for each individual patient, and their sense of their clinical performance remaining resilient in the face of ongoing demands despite high levels of psychological fatigue and frustration. Under this tension, the demands for metabolism of free energy to offset and 'reverse' entropy production at a local scale are potentially in excess of the system capacity to remain in steady-state, which may promote short-term meliorating responses that fail to account for longer term benefits of more reflective optimisation strategies.

A workplace which allows space and time for deeper relationship between patient and doctor may facilitate the preponderance of *Ichi-go Ichi-e*, which, in the experience of participating doctors, favours improved satisfaction, resilience to 'bad days', and the identification of the elegant solution, all of which is more likely to overcome high entropic states, foster clinical equipoise, and allow for recovery of the steady-state via homeostasis and non-random injections of intentional energy.

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[623] R Herrnstein, *The Matching Law: Papers in Psychology and Economics* (Cambridge Mass.: Harvard University Press, 2000), 189-193.

The conceptual and practical issue of optimisation versus melioration is not easily configured or resolved. In computer science, complex 'response surfaces', analogous to a Schön performance landscape, present designers with situations in which control decisions need to be made within high-dimensional, multimodal, discontinuous and noisy input functions.[624] Deciding on the 'optimal' output requires algorithms that use random and heuristic functions in iterative passes across the response surface. Interestingly the success of some classes of algorithms is contingent on the population size: a large population size reduces the risk of early convergence to sub-optimal solutions, but at the same time increases the number of calculations needed to be performed, which can create unacceptably slow rates of convergence.[625]

When one considers the role of convergence in defining caseness in the clinical encounter, it is clear how the experience of a doctor might impact on the size of the population of 'cases' against which a patient is compared and the time taken to form a decision on caseness in temporal relationship to the space-time in which the patient and doctor are meeting. It is readily apparent that these convergence and temporal functions could vary according to the level of the doctor's experience, the patient's ability to interocept and describe what causes their suffering, and the context of the resources available within the environment to assist patient and doctor in their pursuit of satisfactory case identification.

This is perhaps a critical crossover point. Optimisation within each clinical encounter may or may not be preferable to melioration depending on the consequences for the life of the individual. In the context of the needs of the Emergency Department, in the face of the impossibly complex number of operations occurring on its 'response surface', one may have to be prepared to accept and work towards melioration instead of optimisation, given the energy demands that optimisation would require in the setting of finite resources and the postulated complex probabilistic phase-space. Optimisation may perhaps even be impossible to deliver within the institutional arrangement of hospitals in current social structures.

Mettas has described a melioration-like process for managing the overall reliability goal of a complex system, with respect to its individual components. Meetas sheds light on how this process can be strategised to manage the tension between optimisation of an

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[624] J Grefenstette, "Optimization of Control Parameters for Genetic Algorithms", *IEEE Transactions on Systems, Man, and Cybernetics* SMC-16, no. 1 (1986): 122-128.

[625] ibid. 122-128.

individual patient presentation and the melioration of the overall department performance, given the uniqueness of the encounter. By allocating a minimal value that is acceptable for the reliability of individual components (optimisation) of a complex system, one can minimise the cost (energy) input for each component while also reaching the specified reliability goal of the whole system (melioration).[626] Reliability can be defined by either fault tolerance or fault avoidance. In the clinical context, some presentations involve pathology for which fault tolerance is acceptable, while others demand a high degree of fault avoidance. In both instances the relevant minimum reliability value could be applied and thus derive the 'cost' required for that component to ensure continued attainment of whole-of-system reliability.

Borrowing again from computer sciences, one can describe the complexity of an Emergency Department as a set of 'autonomous agents' which interact with each other locally in an 'interaction matrix' that is influenced by a 'local fitness function' which constrains behaviour towards more favourable global optima.[627] In the case of humans and social systems, this is a least dissipative system of total entropy, and as a descriptive model it fits comfortably within a critical realist paradigm.

From this complexity perspective, there can be reconciliation of the competing needs of a complex system that at one hierarchical level operates best in conditions of *Ichi-go Ichi-e* and yet, at other levels, must function within acceptable reliability tolerances, given the finite energy resources of the environment. In the hospital system, it is often the doctor who must perform across these hierarchical levels, and whose performance is influenced by, and influences, key controllers operating within the performance landscape that will define the system's optimal, elegant solutions or, on the obverse, increase entropy production and push the system towards greater disorder. This is a sentiment best described by Participant 4:

So we're trying to actually treat these non-ideal patients within a non-ideal model... like, you know, when you're studying for your exams and it's well like ideal, an ideal environment. But the ideal environment is not what we work in. Um, we go for the next best option.

In summary, in complex non-linear dynamic systems (whether thermodynamic or not), the moment at which observation of the system begins materially determines what it is. In the first instance one sees, and so determines how one might try and characterise the

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626 A Mettas, "Reliability Allocation and Optimization for Complex Systems", *Reliability and Maintainability Symposium* (2000), available at http://ieeexplore.ieee.org/abstract/document/816310/ .

627 J Lui and Y Chen, "Toward Understanding the Optimisation of Complex Systems", *Artif Intell Rev* 38 (2011): 332.

nature of that system. Given the inherent unpredictability at short time-scales of the trajectories of elements on a phase-space with two or more attractors in operation, it will take time to discern the general pattern of behaviour of the possible trajectories. Perhaps in some instances if given enough time, the pattern will become recognisable, and yet in other circumstances the passage of time will only increase disorderliness, hence obscuring the ability to make meaning of the observed phenomena.

If the system is thermodynamic, then time and disorder are expected to grow together, potentially exponentially, threatening any chance of restoring order. However, in certain plausible configurations, though overall entropy of a system will necessarily increase over time, with enough information and the presence of effective dissipative structures (such as well-performing doctors) the energetic interventions that reverse entropic derangements and/or support homeostatic recovery at the local scale might still be achievable, given adequate availability of free energy in the external environment.

The inherent instability and probabilistic character of this form of theoretical phase-space is a potent reason to be prepared to experience the clinical encounter with an open mind, because the system is inherently a unique phenomenon even if certain landmarks and characteristics appear familiar. Approaching a system of this nature with the attitude of *Ichi-go Iche-e* may reduce the potential for unintended consequences of imprecise or improper interventions into the system that might arise from 'automatic medicine'.

That is not to say that 'lessons learned' from previous exposure to similar systems are not useful, as is noted with the propensity for learning to improve script activation in cognitive models of decision-making, and the value of long-range information accumulation in periodic systems. These lessons are helpful. However, in the reality of complex or chaotic systems, there is some evidence that it is necessary to wait to ascertain that the unique properties of the system in motion have fallen within the expected boundaries of a control intervention, before applying the control, as this increases the ability to stabilise trajectories onto the preferred path.[628]

5.6.2 Clarity of intention and trajectory do not reduce entropy

Time, and its tendency to increase entropy, cannot be limitless in the clinical context. The haemodynamically unstable bleeding patient, or the hypoxic patient in acute pulmonary oedema, requires immediate interventions based on standardised meliorating protocols of

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[628] D Gauthier, "Resource Letter CC-1: Controlling Chaos", *Am J Physics* 71 (2003): 750.

medical intervention. One can rely upon these protocols because the likelihood of various outcomes in a system involving a heavily bleeding patient or a severely hypoxic patient are no longer equal: there are strong correlations within the system that enforce a limit to the specific end-point possible within that system. In these two scenarios the likelihood of death is much greater than the likelihood of any other outcome, given the parameters. From an entropy perspective, although the 'unit' of the patient has high entropy, total 'system' entropy of the individual clinical encounter is actually low because entropy of the trajectory and outcome are predictably high. Information has been gained about the two intersecting systems (bleeding patient and biomedical foreknowledge of the natural history of people who bleed) that when made sense of through the dissipative structure of the doctor, applying their technical knowledge and memory, can reverse the 'natural' flow of entropy.

There is a relative abundance of meaningful information about the probability of initial conditions and the trajectory of the likely end-point that means, in terms of thermodynamics, it would appear that entropy has been reversed. This is because *intentionality* frames the boundaries of the system one is concerned with, limiting it to the clinical encounter, and disregarding the universal. The probability of death is high (low informational entropy), so system entropy ought to have fallen.

However, Tsallis entropy explains that even in systems where there is a highly skewed likelihood of one outcome over any others, total entropy must continue to increase as more and more elements are added to the system.[629] If one imagines the scenario of the heavily bleeding patient in the hurly-burly of an Australian Emergency Department, it is apparent that even when a department is filled with unexceptional instances of easily derived cases of illness, apparently eminently manageable with 'automatic medicine' which theoretically should reduce entropy production, the total entropic function of the department will actually still be positive, and may even be higher when compared with a department with only a few but very complex and uncertain medical cases.

Inimitability, including our intentions within individual clinical moments, has a critical context in the total system of Emergency Department activity. Clear intentions and a plan to achieve the individual goals of a given clinical encounter can reduce, or perhaps even reverse, the entropic function of that encounter. This is an important feature of

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[629] C Tsallis, "Entropy: A Unifying Path for Understanding Complexity in Natural, Artificial and Social Systems", in *Complex Socio-Technical Systems – Understanding and Influencing Causality of Change,* eds. W Rouse, K Boff and P Sanderson (Amsterdam: IOS Press, 2012).

that unique encounter and may be essential to its successful resolution. However, in the broader sense, despite the possibility that a majority of presentations in an Emergency Department have obvious tendencies that would respond to protocolised therapies, this in and of itself will not reduce overall systemic entropy demands. Tsallis entropy suggests that the total number of clinical encounters unavoidably drives entropy production, not just the complexity or difficulty of each presentation.

This suggests that contemplating the inimitability of the moment of encounter, just as it is described in the tea ceremony of Japan, ought to include thoughtfulness about the dynamic factors of the context within which the encounter takes place. *Ichi-go Ichi-e* can be conceived as having two aspects. Though perhaps a little glib as a descriptor, situational awareness describes that contextual aspect of the moment in the larger system of an Emergency Department, which may be as important as the second aspect: the individual patient or case. Each encounter is then truly inimitable, even when it involves the same patient with the same diagnosis, being managed by the same doctor. Its context will be unique, its place in time is different, and this will influence important functions of the total entropic relations within the causal configuration of each unique presentation in the Emergency Department that shape the choices of how to respond to and manage the recovery from suffering and the restoration of health.

5.7 Second Order Construct 6: Trust

Construct Statement: Trust is described as an essential pre-condition to action taking place in the clinical encounter. It is built swiftly in the clinical encounter as a result of Trust-in-Legitimacy, from which doctors are imbued with fore-trust by patients as a result of personal, cultural and institutional transfers of trustworthiness objects that legitimise the trustworthiness of the doctor to whom the transfer is made.

In sustaining an attitude of *Ichi-go Ichi-e*, in concert with a doubting curiosity towards elegant solutions in clinical equipoise, medical practitioners create a receptive environment for the patient to unfold their individual experience of suffering and for the lifeworlds of the patient and the doctor to contact in an ethically bounded Lévinasian knot of responsibility of self-Other, working towards a shared intention of the relief of suffering. Given the inferences and possibilities suggested by a theoretical approximation of the clinical encounter with a complex thermodynamic phase-space, there remains a general risk in this phase-space of wandering aimlessly across sub-optimal solutions,

unless there is adequate characterisation of the nature of attractors operating across the space. This provides vital information regarding the choice of controllers with which one can increase the likelihood of nudging the system towards more optimal solutions for the trajectory of lifeworld possibilities along the unfolding light-cone future.

In social systems, like hospitals and the interpersonal interactions of individual actors, actors with systems, and systems with systems within them, all these built from a social basis, trust can be likened to an element with strong attractor or controller influences across the phase-space of interaction. In critical realist terms, trust may operate as a causal power disposition inherent in the positioned-practice of the patient and doctor, and as a mechanism that enables actions of various kinds tending along certain trajectories. The strength of its effect across the system of interacting parts can be conceptualised as the affinity of actors with their power to actualise trust, or by virtue of the dynamics of relations between agents and objects that engender trust. These individual affinities may be prone to variability depending on a range of localised factors, and the general strength of trust may also vary as a function of non-local factors of a social nature. The local affinity functions will be described simply as 'trust'; for the broader system-level strength I will borrow a concept from politics and policing related to the function of trust and institutional legitimacy, which I will call trust-in-legitimacy.[630]

In a general sense, trust might be considered an essential *a priori* condition for any action to take place in the clinical encounter that is built from a shared Lévinasian worldview of responsibility.[631] [632] Without it, all action would appear predicated on coercive or subjugative ethical foundations. The one suffering would be *enacted upon* for the predominant need of the actor in the position of power and for their own ends first and foremost. Such conditions of domination are not, unfortunately, foreign to the health-care recipient even in modern hospital settings, and are the conditions for profound abuse and dehumanising degradation such as to warrant the exercise of strong controls over medical practices.[633]

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[630] S Longstaff, "Democracy, Trust and Legitimacy", *Papers on Parliament no.63*, Commonwealth of Australia (2015).

[631] D Orange, *The Suffering Stranger: Hermeneutics for Everyday Clinical Practice* (New York: Routledge, 2011), 63-71.

[632] E Gantt, "Lévinas, Psychotherapy, and the Ethics of Suffering", *J Humanistic Psychotherapy* 40, no. 3 (2000): 9-28.

[633] S Wilkins, *Review of the Mental Health Act 1996 and Criminal Law (Mentally Impaired Defendants) Act 1996* (Citizens Committee on Human Rights Inc, 2003).

Saevi and Eikeland argue that phenomenologically:

Trust belongs to the very basics of life. Trust is relationally lived, felt, and experienced as positively given, when spontaneously it appears. Trust as a "sovereign expression of life", can transform a situation and free the persons involved from being bounded by their own matters. Instead, we are invited by trust to go beyond what we know, and hold on to someone else, as he or she appears to us. In fact, as Lingis claims, "We attach to someone whose words or whose movements we do not understand, whose reasons or motives we do not see".[634]

In the clinical encounter both patient and doctor can be thought of as blind to the origins of the other's motivations and drives. Yet in this state of ambiguity, perhaps even danger, they can be prepared to enact together. Each must be receptive to a *preparedness to trust*, even before encountering of the other. Trust arises before ontology, as Lévinas argues "one is being *for* someone before one is being *with* someone" and the plea of the face of the other is first 'do not kill me' in which a fundamental trust is manifested by virtue that such a plea is, before all else, heard and agreed.[635]

Trust is essential to sociality as sociality is, essentially, an ethical relation — it is not a question simply of moral justice.[636] [637] Being 'just' submits to a more essential relation arising from social proximity in which the alterity of the Other is straightaway a moral command, a command without commandments.

This straightaway moral command without commandments permeates the social institution of the structure of relations of a hospital and its Emergency Department, and may be conferred by each social participant, even before an encounter, upon all those who represent the institution. It is the patient who calls the hospital and its people to themselves, and at the same time embodies the waiting readiness to be called on of the people and their institution. The alterity of the Other calls through the Responsibility to self-Other. In this manner trust in health-care operates, as earlier suggested, in at least two modes — the ethical moment of face-to-face encounter of people, and in relationship to the health-care institution.

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[634] T Saevi and T Eikeland, "From Where does Trust Come and Why is "From Where" Significant?" , *Phenom and Practice* 6, no. 1 (2012): 89-95.

[635] ibid. 91.

[636] E Lévinas, F Bouchetoux and C Jones, "Sociality and Money", *Business Ethics: A European View* 16, no. 3 (2007): 203-207.

[637] L Hertzberg, "On Being Trusted", in *Trust, Sociality, Selfhood*, eds. A Grøn and C Welz (Tübingen: Mohr Siebeck, 2010), 193-204.

5.7.1 Sociopolitical causal configurations influence trust

The sociopolitical frame of public hospital health-care is identified in economic theory as 'merit goods', being those goods and services for which net private benefit is very high but for which private consumption and investment may be too little or too late to realise the benefit.[638] [639] In order for a society to achieve its net benefit, the citizen must be prepared to have their leaders invest in the necessary infrastructure, *and* the citizen must also be convinced to engage with those institutions when seeking relief of their suffering in order to obtain personal relief, as well as realise the longer-term generalised benefit to the society as a whole.

In this formulation there is private need, the relief of suffering, and sociopolitical need, merit goods fulfilment, working towards a shared intention of maintenance, recovery of, or restoration of health status. Admixed with these is the ethical essentiality of the mutuality of responsibility for the Other in the Lévinasian worldview. From the perspective of the one who is suffering, it is possible to conceive of a need for them to be not only trusting of the individual health-care actor, but also prepared to confer a value of trust upon the social institution represented by the health-care actor.

This institutional trust is not dissimilar to that invested in parliament. Longstaff contends that institutional trust is a functional output of a deeper consideration, that of legitimacy.[640] In the first instance people agree socially, via identification as 'citizens', to uphold a set of organising principles like those of a constitution. In democratic settings, citizens confer individual decision-making authority to a collection of representatives in a parliament. In an ideal configuration the citizen expects the parliament, with this consensual power, to act in the 'best interests' of its citizens, often collectively, sometimes individually, for the social good of the state, in accordance to the shared constitutional values. How well any government or other public institution enacts these complex responsibilities and exercises of power will confer degrees of legitimacy in the eyes of each and every citizen.

Modern medical care is so vastly complex and hugely resource-intensive that it is impossible to provide an equalised market access to all the many and varied needs of each

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[638] S Munday, *Markets and Market Failure* (Oxford: Heinemann, 2000), 109.

[639] J Fitzgerald, "Social Impact Bonds and Their Application to Preventive Health", *Australian Health Review* 37, no. 2 (2013): 199-204.

[640] Longstaff, *Democracy, Trust and Legitimacy.*

individual citizen over a lifetime.[641] It is impossible economically for every town or region to sustain a tertiary-level hospital supplying dozens of specialities, cardiac catheter labs, neurosurgery, allied health services, and the hundreds of nurses, junior doctors and students to sustain the immediate and long-term workforce needs. These difference decisions are left, in the main, to the political class to make on behalf of the merit goods of health-care.

Politically, citizens are encouraged to trust the overall health-care system with its many and varied elements located over very large geographical and temporal areas. In addition, for reasons well beyond the scope of this work, in Australia different levels of health-care and health-care providers are subdivided across primary, tertiary and preventative domains. Under these conditions it could be a concern that individual citizens are so confused or ignorant of the complexities of health-care arrangements that their overall preparedness to trust is diminished, or irrationally influenced by extraneous considerations. Such information asymmetry is typical of merit goods dynamics, including in health-care.[642] States rely upon mechanisms to remedy, or at least partially offset, this information asymmetry.

The issues of complexity and asymmetric information are managed through the use of strategies of public disclosure and discourse, some of which are grouped together in what accounting theorists call legitimacy theory.[643] Legitimacy theory strategies do not aim purely to inform consumers; they are also intended to build trust through thoughtful disclosure of outcomes data beyond productivity and profit metrics, to include quality data and social and environmental impacts. These strategies operate on the basis that many consumers are not only interested in the profitability of a company, but will also have other socially oriented interests in the determinable maxims that give legitimacy to the power structures through which organisations do their work.[644]

These strategies can increase the preparedness of the individual citizen to trust the product or service they are consuming and, in the case of health-care, such consumption

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641 A Gutmann, "For and Against Equal Access to Health Care", in *In Search of Equity: Health Needs and the Health System*, eds. R Bayer, A Caplan and N Daniels (New York: Plenum Press, 1983), 43-67.

642 R Williams and DP Doessel, *The Economics of Mental Health Care: Industry, Government, and Community Issues* (Burlington: Ashgate, 2001), Ch7.

643 C Deegan, The Legitimising Effect of Social and Environmental Disclosures - A Theoretical Foundation, *AAAJ* 15, no. 3 (2002): 282-311.

644 M Ruef and R Scott, "A Multidimensional Model of Organizational Legitimacy: Hospital Survival in Changing Institutional Environments", *Admin Sci Quarterly* 43, no. 3 (1998): 877-904.

includes a preparedness to submit to the professional service of the medical professional as an agent who not only professes to be qualified but also in whose performance the suffering citizen can rely upon by virtue of their association with the trusted organisation.[645] [646] Thus, trust-in-legitimacy creates a preparedness in the citizen, prior to clinical encounter, to engage trustingly in the clinical encounter.

Other dynamic factors are at play to varying degrees within individual patients. As an example, from the psychoanalytic perspective, suffering can induce psychic regressions that tend to favour more child-like or infantile dependency dynamics between the suffering person and the authoritative other (as where the doctor is given, psychically, the role of the protective and healing mother or father), relying upon models of trust between child and parent woven into the present relational dynamic.[647] This does not fundamentally contradict, but rather strengthens, the phenomenological perspective that trust may be an essence of the ethical moment of the clinical encounter.

5.7.2 Trust may function across system hierarchies

Conceivably, trust appears to operate across hierarchies of the complexity of the health-care encounter: in relationship to the living actors and between actors and institutions. This can include the trust dynamic between medical practitioners and their colleagues, and this point was articulated by all the participant doctors in various descriptions of its importance in the clinical encounter. The doctors were cognisant of the issues that arise when there is a lack of trust in the competency of colleagues, and they suggested that this can have an immediate impact on productivity in the Emergency Department. Not being able to rely upon the information and actions of a colleague means that variations in protocols and workload distribution among medical colleagues can be adversely impacted, leading to over-servicing and inefficient use of medical personnel resources.

Medical practitioners, who have little say in how their collegiate team is put together, also then rely upon forms of trust-in-legitimacy in their institutions. In the first instance the professional identity of a colleague is communicated via their employment role. They may be, for example, medical, nursing, allied health or ancillary support. Each title

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[645] G Bloom, H Standing and R Lloyd, "Markets, Information Asymmetry and Health Care: Towards New Social Contracts", *Social Sci Med* 66, no. 10 (2008): 2076-2087.

[646] L Gilson, "Trust and the Development of Health Care as a Social Institution", *Social Sci Med* 56, no. 7 (2002): 1453-1468.

[647] J Slochower, *Holding and Psychoanalysis: A Relational Perspective* (New Jersey: The Analytic Press, 1996), 35-61.

connotes assumptions about each agent's roles and abilities within the positioned-practice they inhabit to fulfil health-care-related activities.

At another level in the medical field, the trust-in-legitimacy is influenced by more granular detail such as the status of a colleague along a career trajectory. The expectations regarding competency and performance will vary when comparing, for example, an intern and a senior registrar or consultant. In all instances where there is little personal knowledge of a colleague, the doctor relies upon the institutional capabilities of hospital administrators to provide adequately trained and capable practitioners and systems.

All of the above sketches out a profile of the clinical encounter and its context in the hospital setting in which trust exists as a phenomenological relational dimension of the ethical moment of face-to-face encounter, as well as a more broadly influential impersonal phenomenon of institutional organisation and power, which may exert a tendency for the system to work towards intended outcomes.

Participants in this inquiry each expressed the importance of trust at the interpersonal and professional level. Trust helped create conditions for improved communicative exchanges, which allowed for physical touch and the disclosure of deeply personal knowledge, and facilitated improved fidelity of information exchanged between the doctor and patient, and between the doctor and other health-care colleagues. A lack of trust in peer relationships was identified as a very significant impediment to good care and efficient productivity.

The physician's general attitude towards their patient and the seeking out of clinical equipoise, allied with the legitimacy strategies employed by hospitals and government, can all deeply impact on the preparedness of the citizen to trust their health professional and the institutions through which health-care is delivered. These dynamics are fragile and vulnerable to complex intra-psychic phenomena that arise from the dependent position from which many patients must encounter health-care. Power-relations abuses are an ever present risk in such dynamic environments and must be protected against at the individual, institutional and social level. Without trust, actions are limited by incomplete information, and a potential failure of ethically bounded responsibility of self and other.

The task of orienting the complex non-linear system of the clinical encounter towards an optimal outcome is going to be threatened if there is a loss of influence of trust at the interpersonal level, acting as a potential attractor, and a loss in the strength of trust-in-

legitimacy, acting as a controller across the performance phase-space. This is not the promise citizens make to each other collectively in their commitment to the merit goods justification of the enormous expenditure of energy by society for the provision of public health-care, nor in the individual decision to go to hospital in a moment of overwhelming suffering. Distrust is also toxic to physician satisfaction and resilience, with all the harmful consequences that this can have for each clinical encounter and each patient.

However, instances of health-care frequently take place at times in which trust or trust-in-legitimacy might appear to have little, if any, influence. Consider the unconscious or delirious patient. Earlier the observation was made that intra-personal competing drives in extremis, such as a lost soul in the desert, frequently occur within altered consciousness, creating dangerous impairments of cognitive and emotional decision-making abilities. What then can be understood of the trust position of the delirious patient in such circumstances? Trust is relationally lived, felt and experienced.[648] It is intentional and iterative between self and other. The delirious patient may be so impaired that the intentional self is rendered mute by the circumstances of their dilemma. Similarly, on what grounds is the doctor to draw any sense of being trusted in, when faced with a delirious or an unconscious other? One might strain the formulation of trust as being capable of proxy expression in the actions of others who bring the unconscious or delirious patient to the Emergency Department, a sort of proxy for trust-in-legitimacy, once removed. Still, there seems to be something tenuous in such a characterisation. There is an impersonal quality to the actions of others on behalf of the agent whose alterity and truth cannot be rendered in the first person. The resulting relationship between patient and doctor is not an essential trusting arrangement; instead it is the result of some other more essential element. For there is little doubt that the doctor will still act for the intended benefit of the patient.

As Participant 1 described, doctors will act within the pretext of an implied consent to treatment, engendered by virtue of the presentation of the patient to the Emergency Department by whatever means. The origin of this pretext is, in a Lévinasian worldview, arguably the result of the *a priori* of responsibility. This is a responsibility made real by the knowing of the essential suffering of the Other, and the self-Other knowing of its futility as an aspect of one's own capacity to suffer. In this formulation, responsibility is

[648] Saevi and Eikeland, "From Where does Trust Come and Why", 89-95.

the eidetic element of encounter, and trust is rather more an ideal expression of the *a priori* of responsibility.

This line of inquiry suggests that while trust may be a valuable mechanism and/or disposition between the agency of patient and doctor, the causal configuration of the clinical encounter is more essentially the ethical knot of self-Other responsibility and suffering. Trust is, in this characterisation, an optimising element which can positively impact on the context of the clinical encounter. However, the primary outcomes of recovery and maintenance of life can be achieved in its absence in the patient-doctor relationship, and in the relations of staff, and even without a discernible level of trust in the structures of an institution.

5.8 Second Order Construct 7: Enthymemes

Construct Statement: Indirect responses and allusions are used in communicative exchanges to build trust and common understanding in an overarching strategy to the localised objectives of 'question:answer' inquiry.

Rather unexpectedly, there were strong currents of indirectness and allusion discovered in the dialogues throughout participant interviews. Often sentences were only half spoken, or allusions and approximations used instead of direct reciprocity of language or meaning from one to the other, as we built a common basis of understanding in which we both satisfied ourselves that a 'question was asked' and a 'question was answered'.

This mode of communication seemed to function as a 'test' of reciprocal understanding. Given how significantly indirect language runs counter to much of the objective goals of a clinical interview between a patient and a doctor, its appearance in this research encounter may be of interest in respect of its possible reflection of phenomena within the clinical encounter.

What was encountered in these conversations was significantly different from the 'open-ended' question style so frequently reinforced in medical education as a preferred model of interviewing in clinical settings.[649] Open-ended questions are employed to create space for the patient to tell their own story in relation to the problems and issues they face. Closed questions are then used to seek clarification, and are supported by reflective re-statements of the patient's own words and descriptions. All this is done, along with

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[649] M Lipkin, R Frankel, H Beckman, et al, "Performing the Interview", Ch 5 in M Lipkin, S Putnam and A Lazare, *The Medical Interview: Clinical Care, Education, Research* (New York: Springer-Verlag, 2011): 65-82.

careful word selection, to achieve 'rapport', a sense of shared understanding that supports trust building and from which, theoretically, better clinical data are gleaned.[650][651]

Most of the doctors interviewed identified rapport-building through effective communication, directed towards shared understanding, as one of their key responsibilities in the clinical encounter. Participant 1 described some of the dynamics involved, sentiments shared by the other doctors:

The first thing that happens between me and the patient is we size each other up. And, um, we work out how we are going to communicate. I know that that is a deliberate step for me interacting with the patients. It is not something that happens by chance. If I meet a patient I'm working out in the first couple of seconds what kind of doctor do you want me to be; what communication style will I adopt to get the information quickly and efficiently from you and for you to trust me. To build rapport really quickly.

This same doctor recognised that the process of communication was iterative and ultimately formed a key foundation of preparing the patient to trust their management:

Um, and then I think we have a transfer of information between us. I work out what sort of questions I want to ask them, they give me some answers and then we nuance that until we get to a point where we feel we have enough information where we start doing things… so during that history I would hope that the patient has the the opportunity to answer me in a way that not only gives me the information but also makes them feel listened to, makes them feel like they are taken seriously, makes them feel like they actually have the opportunity to describe their symptoms in a way that is satisfying to them. (Participant 1)

Participant 3 spoke of the importance of how questions are framed, such that the question-framing can significantly impact on patient care:

Um, well, I guess you can do the bare minimum which means you go and see a patient and you decide and give some sort of pedestrian consultation about. Or you can stand back and look at the bigger picture. Um, and that involves often trying to evaluate what you are doing, and looking at different angles and I'll give you an example. We started doing, we work a lot with [a specialist] team. We started doing some consults when they thought there was a history of depression or self harm and could they manage the process. And then I realised over time the same kind of things were coming up for different groups of people. So I put it to them that we write a booklet together called 'Dealing with [your medical condition]' for the patients, which we have done, and they paid for, and we give to them all now which goes through the [treatment] journey. So we involved the team in that. And I'm trying there and elsewhere to help the patients be more empowered.

In a quantitative sense, the doctors specifically discussed the importance of communication with their patients and colleagues, accounting for between 6% and 22% of the total transcript volumes of the interviews, one of the highest single nodal representations across all the interviews.

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[650] J Ball, B Miller and E Balogh, eds., *Improving Diagnosis in Health Care* (Washington: National Academies Press, 2016), 2.

[651] T Mahmud, *Better Patient Feedback, Better Healthcare* (Cumbria: M&K Update Ltd, 2012), 76.

In the interviews the sequence of question:answer typically commenced with an open-ended question as an introduction to one of the structured interview questions. There would then follow a series of clarifying questions and re-statements, very much in the mode of medical education training, perhaps not so surprising given my own training. An indicative example comes from the interview with Participant 1. The lead-up to this section of conversation came from introducing one of the structured questions regarding the doctor's view of where the clinical encounter fit into the broader health system. The doctor provided an extensive and uninterrupted response, which then resulted in the following exchange:

Interviewer*: So do you think that it is really important, in terms of the way that the individual encounter fits into the broader system, is that it's facilitated by having people around you in all different aspects of that system who at least understand what it means to engage someone at that one-on-one level?*

Participant*: Yeah, and the challenge of it. And the exhaustion of it. It's exhausting to deal with it. I interact with somewhere between 25 and 40 strangers a day on one of the more stressful days of their lives. That is exhausting. Um, and I think you know I find it particularly hard when I am pulled out of meetings to discuss, pulled out of the floor to discuss things, my brain's actually not in the right space. I find it very difficult to switch from direct clinical patient-doctor mode in to management mode or teaching mode. I sort of have to deliberately do it.*

Interviewer*: So you make a conscious —*

Participant*: If my brain's live in a doctor, in a patient-doctor engagement it's actually very hard to do, I sort of delay it or and I think mostly people are forgiving of that, who, if they've got clinical experience...*

Interviewer*: understand why it's actually gotta be —*

Participant*: It's got to be first and foremost.*

Interviewer*: So this leads into a broader section on clinical performance. In your opinion what are the fundamentals of good clinical performance?*

Reflecting on my sensory-emotional experience during this part of the encounter, I was driven by an immediate curiosity about what appeared to me at the time as something of significance. I very much wanted to understand the nature of what the doctor meant by 'deliberately do'. I wanted to understand what is was that they 'deliberately do' to switch thinking modes. I was familiar with large amounts of research on cognitive 'set shifting' and its demands on attentional and executive functions.[652] [653] The participant's response to my half-statement of "So you make a conscious —," took a decidedly different

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[652] J Heisler et al, "The Attentional Set Shifting Task: A Measure of Cognitive Flexibility in Mice", *J Vis Exp* 96 (2015): 51944.

[653] S Ravizza and C Carter, "Shifting Set About Task Switching: Behavioral and Neural Evidence for Distinct Forms of Cognitive Flexibility", *Neuropsychologica* 46, no. 12 (2008): 2924-2935.

direction than immediately intended. The interruption of the participant recapitulated to a point alluded to earlier in their initial response to my open-ended question in which they had referenced the importance of prioritising the needs of the patient. I responded with a generalising word, 'understand', in place of their word, 'forgiving', to test that I had recovered the thread and thrust of what it was they wanted to say. As confirmation, their second interjection finishes my sentence: Me: "it's actually gotta be"… Participant 1: "first and foremost". Perhaps not exactly the words I would have chosen, but unequivocally what I had intended to express as a sign of my having recovered what it was the participant wanted me to understand.

Though the whole sequence ran for nearly five minutes, the definitive statement in answer to the opening question, "How does the clinical encounter fit into the broader health system?", which was "…first and foremost", was not arrived at until we passed through several iterations of dialogue that revolved around this ultimately direct answer. I had attempted to open up a new line of inquiry midway through, but was brought back to the task of 'answering' the question to the participant's satisfaction, which was to conclude that: (a) the clinical encounter must be the central intersection of all the health system; that (b) this results in major cognitive challenges as doctors negotiate different roles and responsibilities; and (c) this is impacted by the receptivity and awareness of non-clinical colleagues being reminded of, or cognisant of, the centrality of the patient-doctor encounter.

These observations are, in and of themselves, unremarkable and emblematic of the findings from theoretical and experimental work in 'pragmatics', the linguistic research field dealing with meaning-making and understanding-making in natural dialogues.[654] The importance of the observation is that it may speak to what Participant 2 lamented:

We don't get taught a lot of that, how to talk to patients appropriately actually at medical school at all. And we don't get taught the management side of things so a lot of us don't know how the medical system works. We don't, and that probably impacts on how we talk to patients as well because we don't understand the, or how things interlink or interplay or the costs of things.

And the relevance of this issue of 'good communication' was succinctly summed up by Participant 1:

And actually mostly I think people would rate me as an okay doctor because I'm a good communicator, not because I'm actually an excellent clinician.

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[654] J Romero-Trillo, ed., *Pragmatics and Corpus Linguistics: A Mutualistic Entente* (Berlin: Mouton de Gruyter, 2008): 5-6.

This was a view shared by all the doctors interviewed.

When considering these reflections in the context of modern Australian medical curricula, in which these doctors were trained, if the exchange is emblematic of the natural dialogue in the clinical setting it is, in the first case, a startling observation; and in the second case, an affirmation of the importance given to clinical communication skills development in medical training.

Participant 2 is an Emergency Medicine registrar, still heavily involved in the formal training curriculum of their college and only ten years out of medical school. Their observation that doctors are not trained 'to talk to patients appropriately' belies the significant investment by university faculties in delivering communication skills training over the past 30 years.[655] This includes significant research efforts to define the optimum components of communication skills training, which were identified as including contact with patients, use of video and role-playing, and didactic teaching on the theoretical basis of good communication.[656] Several programs exist to guide students through the various semantic, semiotic and interpersonal methods for 'effective' communication, and the programs share an overlap of constructions.[657][658]

In expounding the various aspects of the elements of the clinical interview, these frameworks focus on describing examples of 'good' and 'poor' strategies. Lipkin et al do refer to 'linguistic devices' explicitly when describing the basis of some of their recommendations for 'good' communication.[659] However, there is a general dearth of detailed linguistic or communications theory to support the rationale for the various recommendations.

Indeed, this is an issue highlighted by Rees and Monrouxe, whose review of the inclusion of theory in published works in one of the world's pre-eminent medical education journals, *Medical Education*, suggests that despite a decade of recognising the importance of theory description and explanation in original research, it remains conspicuously

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[655] K Bennett and Z Lyons, "Communication Skills in Medical Education: An Integrated Approach", *Ed Research Perspective* 38, no. 2 (2011): 45-56.

[656] M Berkhof et al, "Effective Training Strategies for Teaching Communication Skills to Physicians: An Overview of Systematic Reviews", *Patient Education and Counselling* 84, no. 2 (2011): 152-162.

[657] S Kurtz, "Marrying Content and Process in Clinical Method Teaching: Enhancing the Calgary-Cambridge Guides", *Academic Medicine* 78, no. 8 (2011): 802-809.

[658] Lipkin, Putnam and Lazare, *The Medical Intervien,* 65-82.

[659] ibid. 69.

absent from the pages of the journal.[660] They explain that this is, in part, the result of word limits for publication that force authors to forgo detailed theoretical explanations underpinning research, but they conclude that much of its absence will also reflect its absence in the thinking of the researchers themselves.

In its broadest definition, what transpired between Participant 1 and me, in the example earlier described, was characteristic of an *argument*. The participant sought to explicate a set of premises on which they later relied to form a definitive conclusion to the question of the clinical encounter's place in the health system. A fundamental quality and purpose of an argument is described by Wänke and Reutner:

> *… it is not the information per se which is convincing or not, but what receivers make of it. For information to change a person's attitude in the desired direction it is essential that the receiver draws the adequate inferences about its implications. The argument that vegetables contain vitamins will be lost on ignorant recipients who do not know what vitamins are. Thus, one may define information as compelling if, given the recipient's knowledge structure, this information leads the recipient to the conclusions desired by the persuader... However... The ignorant receiver in our example may arrive at the conclusion that vitamins must be beneficial in some sense if they are presented as a reason to eat vegetables. Paradoxically then, one aspect that makes information compelling is the fact that it is perceived as intended to persuade. This assumption of self-generated compellingness is based on the notion of persuasion as a social exchange, or persuasion game, where the persuasion target expects the persuader to present valid and compelling information.*[661]

Framed in this context, the incomplete speech discovered across my encounters with clinicians gives evidence to a specific class of arguments called *enthymemes*, incomplete argumentations (syllogisms) in which some premises are omitted or implied, or in which conclusions are communicated as innuendo.[662] So, unlike medical education models, where it is assumed that meaning and understanding are built from discrete, and complete, syllogistic deductive logic, evidence from the interviews suggests that real dialogues can be filled with enthymemes which almost certainly convey 'other meanings' intended by the speaker to elicit emotional and psychological responses and meanings in the listener. As Wänke and Reutner describe, one can, through one's styles of argumentation, learn much about the recipient's knowledge structure, motivations and internal logic, through the omission and obfuscation of exact meaning in dialogues. This

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[660] C Rees and L Monrouxe, "Theory in Medical Education Research: How Do We Get There?" *Med Ed* 44 (2010): 334-339.

[661] J Forgas, W Crano and J Cooper, eds., *The Psychology of Attitudes and Attitude Change* (New York: Psychology Press. 2010), 183-198.

[662] L Knight and K Sweeney, "Revealing Implicit Understanding Through Enthymemes: A Rhetorical Method for the Analysis of Talk", *Med Ed* 41 (2007): 226-233.

can in turn direct either the speaker or the listener towards preferred conclusions within the unfolding of the dialogue.

Codification of syllogistic and rapport-building communicative exchanges has been effective in improving the average quality of clinical communication skills of medical graduates.[663] [664] [665] This may not, however, adequately prepare a student or doctor for real dialogue in the clinical space. This poses profound issues in a setting in which high entropic states are made sense of predominantly in the communicative *phrase-space* of the phase-space of the clinical encounter. If these documented exchanges with the doctors in this study are indeed fractal representations of the nature of clinically oriented communications in Emergency Departments, an over-reliance on formalised constituents of 'effective clinical communication', couched in deductive logical paradigms, may invalidate responding to, or making sense of, these highly meaning-making linguistic pragmatics.

Doctors are unlikely to resolve the best solutions to a patient's suffering if they are ill equipped to grasp what the patient intends and means beyond words and basic semiotics. Participants were aware of the nuance of language and communication, and also of its irreducible role as a mechanism for framing the problems at hand and the medical solutions. However, some of the participants acknowledged an incomplete sense of the most effective ways to communicate and truly understand the experience of their patients. On the whole, this may not impede achieving the ultimate outcome of recovery or restoration of health. However, in circumstances of higher uncertainty, riskier trajectories, and incomplete data, it may be the subtler, implied elements of clinical encounter that give insight into important motivations, fears, uncertainties, or even pathologies; that bring the doctor closer to the living experience of the patient, thus deepening their capacity to bear witness to the patient's suffering. Enthymemes and other pragmatics of communicative exchanges may support a more tightly bound ethical 'knot' of reciprocal responsibility.

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[663] E Loureiro et al, "Teaching and Assessment of Clinical Communication Skills: Lessons Learned from a SWOT Analysis of Portuguese Angolan and Mozambican Medical Education", *Porto Biomedical J* 2, no. 2 (2017): 47-58.

[664] M Hausberg et al, "Enhancing Medical Students' Communication Skills: Development and Evaluation of an Undergraduate Training Program", *BMC Med E*d 12 (2012): 16.

[665] M De Villiers and M Van Heusden, "A Comparison of Clinical Communication Skills Between Two Groups of Final-Year Medical Students with Different Levels of Communication Skills Training", *SA Fam Pract* 49, no. 7 (2007): 16-16d.

Much like trust, the pragmatics of real communication between patient and doctor might be better understood as optimisers or meliorisers of the more essential element of responsibility. Nuanced argumentation of a pragmatic kind might facilitate identification of the clues to the elegant solution for the resolution of suffering as the 'information gap' (i.e. entropy) is bridged between the key features of initial conditions and their expression in language and embodiment.

5.9 Second Order Construct 8: Neighbour-Love

Construct Statement: 'Safety culture' can be understood as a substitute for love and concern for the suffering of others. Safety and quality language operate to sanitise uncertainty and adversity inherent to a clinical encounter, and to protocolise compassion.

First Order Constructs 6, 8, and 9 (Safety, Trust, and a Sense of Control) form the basis for the conception of this Second Order Construct, Neighbour-Love. In the evidence for these three propositions, interview data support the inference that participant doctors recognise the significance of safety, the impact on safety caused by issues such as time-based targets, and the role of safety in building the foundation of trust for action to take place.

During the nodal coding of the interview transcripts, one of the most significant inductive nodal labels to arise was 'Sense of Safety'. This concept was stimulated particularly in Interview 2, in which the participant described on several occasions that one of their primary responsibilities in the Emergency Department was to ensure a patient was kept 'safe'. Each of the participants described various situations in which perceived threats from environmental and external factors, including the 4-Hour Rule, stimulated significant expenditure of energy on their part to overthrow the actions of others in order to sustain a sense of safety on behalf of their patient. The loss of a sense of safety could also create performance impairment due to fatigue, stress and cognitive overload.

In a Lévinasian worldview, the ethical knot of self-Other responsibility can easily accommodate a characterisation that includes a doctor's sense of concern for the patient's safety. However, as described earlier, if the knot is iterative, then it necessarily follows that a concern for the safety of the patient is in equal measure an expression of concern for the safety of the clinician themselves. Participating doctors expressed as much in their

recognition that working in situations in which safety was subordinated to the 4-Hour Rule, deleteriously impacted on their sense of self-efficacy and performance, and emotionally disturbed them.

In the past three decades, a significant premise of institutional and government interventions in health-care has been predicated on improving patient safety, most palpably in response to the highly influential report 'To Err Is Human: Building a Safer Health System', released by the IOM in the United States in 1999. In the report it was estimated that between 44,000 and 98,000 deaths each year in America were due to medical error alone.[666] In the report, authors lament that medicine is 'decades behind' other high-risk industries in building safer environments for patients. Sloane Donaldson, one of the authors of the original report, stressed that the report was intended not as a means to highlight errors as the primary problem, but to recognise lessons from other industries, and to suggest that patient safety could be engineered into the design, delivery and monitoring of systems that recognised errors as a fundamental and inevitable aspect of health-care.[667]

Five years on from the IOM report, several studies concluded that progress, although underway, had manifestly fallen short of what was required to see hospital systems provide safer conditions for treatment.[668][669] Wachter reported in 2009 that, at the 10-year follow-up, progress had been made but remained well below expectations. According to Wachter, failure of widespread improvement arose from inadequate funding, the unintended consequences of health information technology, and balancing 'no blame' versus accountability among practitioners.[670]

In a 2016 'systematic review of systematic reviews', Zegers et al conclude that overall evidence for patient-safety interventions in hospitals remains weak, except for a few

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[666] IOM, *To Err Is Human: Building a Safer Health System* (Washington: National Academy Press, 2000).

[667] M Sloane Donaldson, "An Overview of 'To Err Is Human': Re-emphasizing the Message of Patient Safety", in *Patient Safety and Quality: An Evidence-Based Handbook for Nurses,* ed. R Hughes (Rockville: Agency for Healthcare Research and Quality, 2008), Ch 3.

[668] R Wachter, "The End Of The Beginning: Patient Safety Five Years After 'To Err Is Human' ", *Health Affairs* W4 (2004): 534-545.

[669] L Leape and D Berwick, "Five Years After To Err Is Human: What Have We Learned?", *JAMA* 293, no. 19 (2005): 2384-2390.

[670] R Wachter, "Patient Safety At Ten: Unmistakable Progress, Troubling Gaps", *Health Affairs* 29, no. 1 (2009): 165-173.

specific intervention strategies for high-risk groups such as patients with delirium, in-hospital acute coronary events, falls, adverse drug reactions and infections.[671]

Hence, there appears to be a confluence of concerns for and about safety from both the doctors in direct contact with patients, and the institutions responsible for the working environment in which these encounters take place. There is recognition from doctors that their errors contribute to unsafe outcomes for their patients,[672] and a safety literature that supports the conclusions of the inevitability of these errors.[673] Errors arise less likely out of malice than from the reality that 'good people' are working in complex and uncertain high-risk situations. However, despite this confluence of concern for safety from the frontline and management, empirical results such as those reported by Wachter, Zegers, and Leape and Berwick suggest the magnitude of improvements compared with the investment of energy (e.g. money) in supporting those improvements is lower than might otherwise have been expected. This should be of great concern given, for example, the nearly 5% per annum increase in health expenditure in Australia each year.[674]

It is interesting to consider what the domain of 'patient safety' might actually be communicating beyond an explicit acceptance of a mundane literal meaning. In the 'To Err Is Human' report, concern for safety is primarily directed at avoiding avoidable harms, a sentiment echoed in part by the Australian Productivity Commission.[675] For doctors, one of their abiding credos of the past century and into today is the moral principle of *primum non nocere* — first, do no harm.[676] This idiom is intended to remind doctors that every decision regarding a patient has the potential to cause harm.[677]

Above, in considering the evidence for Second Order Construct 1 (Suffering), I painted a picture of hospitals in which it is not so infrequent that actually great harm is inflicted upon the suffering patient in order to achieve a longer-term goal of the restoring a function fit for survival. In terms of morality, then, doctors' actions are based on

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[671] M Zegers et al, "Evidence-Based Interventions to Reduce Adverse Events in Hospitals: A Systematic Review of Systematic Reviews", *BMJ Open* 6 (2016).

[672] Williams, et al, "The Relationship of Organizational Culture, Stress, Satisfaction, and Burnout", 203-212.

[673] J Reason, *The Human Contribution: Unsafe Acts, Accidents, and Heroic Recoveries*, (Abingdon: Ashgate, 2008), 239-263.

[674] Productivity Commission, "Improving Australia's Health System: What We Can Do Now", *PC News*, (2005), available at http://www.pc.gov.au/news-media/pc-news/previous-editions/pc-news-may-2015/improving-australia-health-system/improving-australia-health-system-pc-news-201505.pdf .

[675] ibid.

[676] D Sokol, " 'First Do No Harm' Revisited", *BMJ* 347 (2013)

[677] C Smith, "Origin and Uses of Primum Non Nocere--Above All, Do No Harm!", *J Clin Pharm* 45, no. 5 (2005): 371-377.

competing priorities between *primum non nocere* and self-Other responsibility in which it is known one may need to cause more suffering in order to make an ultimate entropic reduction.

'Doing no harm', expressed as non-maleficence, forms one of the quartet of principles that informs a biomedical ethical paradigm known as 'principlism', the other three being beneficence, autonomy and justice.[678] In this paradigm, doctors seek solutions to complex ethical dramas in the clinical encounter through conscious deliberation on the matrix of competing moral imperatives of the four principles. The model has critics, but nonetheless it is arguably the ascendant paradigm in current medical practice, in part because of its economy of calculation in determining the 'right choice'.[679] [680]

Given these considerations with respect to the IOM report and biomedical ethics, one might conclude, then, that 'patient safety' is an issue both of the material aspects of health-care (intervention design, doses, cleanliness, radiation etc.) and of its ethical enactment.

5.9.1 Patient safety is a function of material and ethical concerns

This is not a startling discovery given the earlier ethical premise of the Lévinasian knot in the clinical encounter, but it serves to disambiguate what is intended in the concept of patient safety. To this end, 'patient safety' as a term may unintentionally conflate issues of material safety with ethical safety, when the two sets of issues require differing approaches as a result of their divergent epistemological origins. Without disambiguation, one may fall into the trap of treating all issues of safety by application of *commensuration*, which Evans defines as "essentially a method for discarding information in order to make decision-making easier by ignoring aspects of the problem that cannot be translated to the common metric".[681]

Given the possibility that entropy can be described as a function of information, the impact of commensuration and low-fidelity information exchange in the clinical encounter may be profound. Any time information is discarded within a non-equilibrium system, without recourse to its potential impact on Second Law thermodynamics, this

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[678] T Beauchamp and J Childress, *Principles of Biomedical Ethics 4th Ed.* (New York: OUP, 1994), 37-38.

[679] R Davis, "The Principlism Debate: A Critical Overview", *J Medicine Philos* 20, no. 1 (1995): 85-105.

[680] J Evans, "A Sociological Account of the Growth of Principlism", *Hastings Center Report* 30, no. 5 (2000): 31-39.

[681] ibid. 32.

may inadvertently increase the rate of entropy production, and hence suffering, within that system. Information pertaining to important ethical safety concerns may also inadvertently be discarded if material and ethical safety issues are thoughtlessly conflated.

Painful examples of such ambiguities were alluded to by the participants, typically in tones of ironic jest. In one instance, Participant 1 described the effect as follows:

I think it can be just cognitively that if you're in charge of the ED you have to maintain situational awareness and it's easy, for me it was relatively easy to add time-based targets into my degree of situational awareness I had over the department anyway. Except, when it gets really really busy, I let the nurse navigator run that and I go and do the clinical work. So it's something I drop off the radar if I'm not coping… I'll justify it that it was too busy and I'll get, you know… but the irony is, you know, that as the department gets more and more full, you can't, you know, actually getting people out of there would help you. But if you get them out to somewhere you don't feel is safe or they're not fully worked up, you're just going to worry about them anyway. You're not actually reducing your cognitive load… Well I'm going to go home and think about them all night and ring up three times during the night to check they got their antibiotics [laugh]

Can one take at face value that the nature of this doctor's concerns are primarily the material issues of antibiotic delivery? In a system where handover of management of patient plans to other doctors is routine and rigorous, and multiple checks and balances exist to ensure delivery of medications is followed through, notwithstanding a potential failure of these routines, it seems an unlikely trigger for sleeplessness and rumination.

The clue to the true stimulus is in their statement that *"if you get them out to somewhere you don't feel is safe or they're not fully worked up"*. Emotional activation is not primarily the result of material concerns related to the patient, at least not entirely. It is the sense, the *feeling*, that the encounter was incomplete in a manner that leaves the doctor with a sense of danger, a sense of incomplete execution of their clinical responsibilities. A sense of a failure to satisfy *their responsibility* for the one who is suffering. The sense of a lack of safety arises from an ethical uncertainty, not a material issue as described. The doctor is sensate to an incomplete resolution of the Lévinasian knot of self-Other responsibility given in the ethical moment of doctor and patient being bound together in the clinical encounter. This is the stimulus of their anxiety and rumination, projected as it is in this instance onto the materiality of medication delivery and cognitive overload.

To understand how danger arises from this ethical incompleteness, it is necessary to look more deeply into the origins of the ethical moment, into what ethical substrate the bind of responsibility for the Other creates. Lévinas argued throughout his works that, phenomenologically, the encounter with the Other forces a tension in which one struggles

between 'seeing' the totality of the Other as they are given, and one's tendency to reduce exteriorities to concepts for apprehension in thought, which is an ultimately irresolvable tension that renders the truth of the Other invisible.[682] The Other is invisible because one cannot ever represent in categories all that is given in the Other. When the doctor projects their anxiety onto a category such as 'incomplete work-up' or 'incomplete treatment', they attempt to reduce the more significantly problematic and provocative ethical disruption of the reciprocal 'incomplete givenness': of themselves to their patient in their witnessing to their suffering, and of the patient to them in their givenness as caseness and suffering Other.

However, Participant 1 is insightful enough not to displace this anxiety into a false altruism, which is an easy intellectual escape in which one might forgive oneself the inadequacy of their service to the patient with aphorisms that might include, 'I did the best under the circumstances', or 'I did as much as anyone could'. Instead Participant 1, in tacitly acknowledging the uncertainty and incompleteness, remains sleepless and worried. From the Lévinasian perspective, the biomedical paradigm, with its deterministic and categorical ontology, will invariably dishonour the totality of the Other by its very nature. This characteristic of the biomedical approach to clinical encounter does not, however, extinguish the ethical consequences of its shortcomings.

5.9.2 Self-Other Responsibility fosters acts of love

Participant 1 recognises the uncertainty and incompleteness of their care for their patients and this is what keeps them awake at night. In this they acknowledge and accept that they cannot truly know if they are innocent of causing harm — ethically or materially — to their patients through the incomplete recognition and honouring of the patients' alterity and givenness. In the Lévinasian worldview an act of acceptance lies at the heart of the doctor's ability to do something quite profound: to love their patients. In short, Lévinas argues that "responsibility for my neighbor… is… the harsh name for what we call love of one's neighbor", a love "without Eros, charity, love in which the ethical aspect dominates the passionate aspect, love without concupiscence".[683] It is not a romantic love, but one instead that is commanded from the Other by virtue of the ethical bond of responsibility, and only made possible when we accept the uncertainty of our innocence

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[682] C Beales, *Lévinas and the Wisdom of Love: The Question of Invisibility* (Waco: Baylor University Press, 2007), 4.

[683] M Ferreira, "Kierkegaard and Lévinas on Four Elements of the Biblical Love Commandment", in *Kierkegaard and Lévinas: Ethics, Politics, and Religion,* eds J Simmons and D Wood (Bloomington: Indiana University Press, 2008), 85.

or otherwise in the harm we might cause from our inability to apprehend the invisible truth of the Other, when we must first reduce them to concept.

Lévinas did not shy from the controversy of the term 'love', a word "worn out and debased", and so in preference he sought to evoke the truth of the meaning of neighbour-love by referring to it is as a responsibility for the Other. Ferreira argues, though, that the distinction between responsibility and love was not hard and fast and often Lévinas' writing used them interchangeably.[684] Perhaps, then, a similar issue is at hand in this Second Order Construct in which 'Safety' merely represents an important communicative distinction from the alternative expression of 'love', a word that may misrepresent what is intended as an act of responsibility, as opposed to what would be implied by erotic or romantic love. If the term 'love' were generally understandable as it is intended in terms of 'neighbour-love' then there is no controversy to address other than to acknowledge the semantic issues.

The *prima facie* concern of the patient safety movement and 'safety culture' is the material safety considerations relating to patient treatment and care and the working environment and performance of its actors.[685] That is not to say the ethical paradigm is ignored. Leape acknowledges that the most "profound" challenges in making progress in improving patient safety are the "ethical imperative to do all things practical to prevent errors and injury to patients, the need to respond appropriately when things go wrong to find new methods to prevent recurrence, the requirement for honesty and openness in dealing with our patients when things go wrong, and taking responsibility for ensuring that all of our colleagues are safe and competent".[686]

However, these "ethical imperative[s]" appear to arise from concerns for material outcomes. In Leape's construction the ethical arises *because of* the material: injury, error, poor system design. In Lévinas, the material is instead a consequence of the *a priori* ethical responsibility for, or love of, one's neighbour. In reducing 'ethical concerns' to an origin in categories and concepts of 'safety', the Other is pushed further away from one's grasp, and their totality of alterity is reduced to category, compounded by the further reduction to quantitative 'data points' in monitoring, feedback and research actions used to measure 'progress' in safety. Groopman and Hartzband go as far as to conclude that

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[684] ibid. 85.

[685] B Youngberg, *Principles of Risk Management and Patient Safety* (Sudbury: Jones and Bartlett Publishers, 2010), 294-297.

[686] L Leape, "Ethical Issues In Patient Safety", *Thorac Surg Clin* 15, no. 4 (2005): 493-501.

the emphasis on the quality dimension of patient safety has driven the rise of protocolised treatment plans to standardise care for all patients that actually promotes more unsafe and injurious outcomes for patients because of its fallibility unique circumstances of each individual patient.[687]

The uncertainty, danger, and potential for death in the clinical encounter intensify the asymmetric responsibility of self and other, of doctor *for* patient. It demands of the health-care actor that they put themselves and their needs behind and in service to the suffering one, even as this may indeed be an act of self-love seeking to reduce the self-suffering acknowledged in bearing witness to the suffering of the other-patient. Ethically, in a Lévinasian approach, these acts are first and foremost acts of love, a love commanded from and by the suffering of the other. The profound asymmetry of responsibility between doctor and patient in an emergency setting establishes a rational precedent that the situation might demand that the doctor indeed make the sacrifice to take "the bread from one's mouth, of one's own mouthful of bread", to nourish the hunger of another with one's own fasting.[688] The participants' interviews suggested this might be both a figurative and a literal truth in the pressure of hospital care.

Such a commandment ought to be anticipated to make enormous demands energetically on doctors, in a system a long way from equilibrium and perhaps even, in a turbulent high entropic state, a state of increasing disorder and transitions. Categories such as 'cognitive biases', 'fatigue', 'hunger' and 'cognitive overload', as well as all the many other 'variables' described in reductive research models, belie a harsher and more painful truth of the impossible tension of the loss of gnosis of the Other, an interoception of the violent rejection of the suffering other by categorisation and dehumanisation in the biomedical paradigm. Insulating oneself from acknowledging such harsh realities is possible through rationalising decisions in a matrix of treatment protocols, ethical 'principles' and false altruism ("I did the best I could under the circumstances"). However, in the instance of the experience described by Participant 1, instead the doctor lies awake at night and ruminates. Why?

Satisfaction of the material alone does not automatically give relief from the fear that soul murder has been committed through the rejection of the totality of the suffering other and the patient's subjugation to a categorical ontology. This may even be a process

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[687] J Groopman and P Hartzband, "Why 'Quality' Care is Dangerous", *Wall Street Journal* (April 8, 2009), available at https://www.wsj.com/articles/SB123914878625199185 .

[688] E Lévinas, *Otherwise Than Being or Beyond Essence*, trans. A Lingis (Dordrecht: Kluwer Academic Pub, 1981), 74.

grossly magnified on those days and nights in which demand so completely exhausts supply: the supply of self, of love, of material resources, of acknowledgement. It may be inevitable that doctors commit necessary harms, in the form of ethical reductions and material prioritisation, in an imperfect and disorderly health-care system which would otherwise demand much more than the nearly 9% of GDP currently commanded.[689]

It may equally be possible that material and ethical concerns of safety have been conflated, which under clearer skies might instead be addressed with a greater consciousness of the energetic differences. From a critical realist perspective, concern for safety, if properly understood as both a concern for the material and an ethical neighbour-love, may have the potential to focus attention and efforts on the causal powers, mechanisms and tendencies of the structure of relations within the Emergency Department that favour better outcomes. In disambiguating the ethical from the material in the concern for safety in health-care, one may yet discover that there is a relatively smaller energy requirement to support improved ethical performance that, as it happens, drives improved material performance because of their reciprocal relations in the dynamics of the clinical encounter. In addition, an emphasis on understanding and addressing the nature of suffering may potentially bridge both ethical and material safety concerns if, as I have postulated in the Constructs above, suffering is at once both a signal for the overwhelm of biological systems in the patient, and the eidetic provocation to enactment in the clinical encounter's *a priori* self-Other knot of responsibility.

Despite this disambiguation and the clarity it may provide with respect to useful intervention to improve safety, a certain modesty might be required in framing expectations about the quantum of improvement one might expect from manipulating a few variables in the complexity of the causal configuration of an Emergency Department. In support of this view is the research described in *Chapter 2: Literature Review*, in which evidence of the 4-Hour Rule's benefit was generally only found in institutions that took a whole-of-hospital clinical redesign approach, in which dozens of mechanisms and causal powers were modified and adapted, along with changes in the causal configuration of the structure of relations.

In this characterisation, the relief of suffering serves to address both the ethical and material aspects of a patient's need, fulfilling the obligations and expectations of a society that has invested enormous resources into a biomedical response to illness, disease and

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[689] OECD, "How Does Australia Compare?", in *Health at a Glance 2015: OECD Indicators* (Paris: OECD, 2015).

disability. In the Lévinasian worldview, it is something of a semantic issue that the word 'responsibility' is substituted for 'love', a process that ensures the erotic and romantic aspects of love may be clearly disambiguated from the more essential calling-to at the core of both love and responsibility. This suggests that in terms of eidetic considerations, Neighbour-love may be synonymous with self-Other responsibility. Such an arrangement does not appear to undermine the structure of this Construct, that safety is an alternative, sanitised and less emotional framing of the essential responsibility to other.

However, the distinct emotionality proposed in the term 'Neighbour-love' is more resonant with that aspect of safety and safety culture which is readily discerned in the experience described by participants. Neighbour-love captures something closer to the emotional valence of the ethical commandment of responsibility: that it should be an act of love 'without concupiscence', imbued with the tenor and restraint of a deep concern for the life of the 'neighbour'.

5.10 Second Order Constructs Summary

In this chapter, the empirical phenomenological inquiry has surfaced eight candidate constructs as potentially essential, intersubjective elements of the phenomenon of the clinical encounter, within which the patient-doctor relationship unfolds. Given the evidence presented in *Chapter 2: Literature Review* and *Chapter 3: Methodology*, contemplation of the 4-Hour Rule's impact on the patient-doctor relationship from the perspective of doctors required firstly a return to theorising the underlying ontological nature of the clinical encounter in the Emergency Department setting.

The First Order Constructs, presented in *Chapter 4*, have established the descriptive basis upon which to build an ontological framework. Aided by a critical realist perspective, the Second Order Constructs aimed to define the intersubjective, or transcendental, elements of the clinical encounter and further evidence of the impact of the 4-Hour Rule, so that one might come to a more complete understanding of how complex interventions in health-care, such as the 4-Hour Rule, effect change in the dynamic and non-linear complex environment of an Emergency Department.

From the eight Second Order Constructs, there is evidence from imaginative variations that five of them — Suffering, Entropy, Caseness, *Ichi-go Ichi-e* (inimitability with uncertainty) and Neighbour-Love (Safety) — may be substantive elements in making

sense of the nature of the clinical encounter and the mechanisms through which a time-based target may exert influence.

Of the other three Constructs — Clinical Equipoise, Trust and Enthymemes — while they are significant in their potential to optimise or moderate the efficiency and effectiveness of the communicative exchanges and functional dynamics of the structure of relations of the clinical encounter and Emergency Departments, they may not, in and of themselves, be essential in an absolute manner to achieving the intended outcomes of health-care in an emergency setting. Imaginative variations on these Constructs suggests they do represent important and worthwhile objectives and intentions within the clinical context. However, in terms of phenomenological essentialism, each Construct appears to be contingent on something more fundamental represented by the other five Constructs. For example, in the imaginative variations on trust in Construct 6, evidence suggests that levels of trust can impact on patient outcomes. However, without the more essential ethical knot of self-Other responsibility, trust is unlikely to achieve the intensity or quality of mutuality required for it to effect a positive influence.

The findings have been illuminating in terms of both the richness of the participants' lived experience and what their individual experience potentially offers in respect of a more collective understanding of the impact of the 4-Hour Rule, as well as a deeper understanding of the possible structure of relations of actors, agencies, technology, and discursive devices such as health policy and regulation. In the following two chapters, the consequences and opportunities afforded by an exploratory approach to the nature of the clinical encounter and the impact of the 4-Hour Rule using empirical phenomenology are discussed with the intention of clarifying a more complete ontological description of the phenomenon and offering some recommendations for how future research might make use of these insights in framing and designing complex interventions in health-care.

CHAPTER 6: Discussion

6.1 Overview

This chapter summarises the major findings from the empirical phenomenological investigations, and the implications arising from them, with an emphasis on trying to avoid what Morin has identified as a tendency "to fall repeatedly into reductionist, simplistic, distorting and manipulating ruts" when trying to make sense of complexity and systems.[690]

A brief synopsis of First and Second Order Constructs is presented, with a discussion following on the implications for the essences of clinical encounter as illuminated in the phenomenological inquiry.

The potential for new ways of characterising the purpose and functions of Emergency Departments and the professionals who work within them is explored in terms of critical realist philosophy, complexity modelling and Lévinasian ethics. The outcomes include conceptualising an ethical and biological duumvirate joined by suffering when it is characterised in terms of an entropic phenomenon. In medicine, ethics and biology are often represented as two separate 'houses' of practice; however, as a consequence of exploring the possibility of an entropy of suffering, these two houses become united.

6.2 The lifeworld of doctors: the First Order Constructs

In this section, I reflect upon the First Order Constructs identified in the initial descriptive empirical phenomenology inquiry, from which I learned how doctors make sense of their place in the health system, the experience of the clinical encounter, their clinical performance and their experiences of the impact of the 4-Hour Rule.

According to the evidence provided by doctors who participated in this research, the 4-Hour Rule has had a deep and enduring impact on the dynamics of the patient-doctor relationship in Australian public hospitals.

In this inquiry, doctors described manifold effects of the changes wrought by the introduction of time-based targets in Emergency Departments. First Order Constructs 4 and 5 speak directly to the impact in relation to practitioner performance and

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[690] E Morin, "The Concept of System and Paradigm of Complexity", in *Context and Complexity,* ed. M Maruyama (New York: Springer-Verlag, 1992), 125.

responsibility. Themes include the strain on senior clinicians to maintain situational awareness of the performance of a whole department; challenges working with colleagues of varied capability and interest under the pressure of achieving targets; reduced opportunities for learning and development, especially with procedural skills; increased conflict between staff members and a responsibility to try to manage this; and a drive towards increased senior-clinician-led activity in all aspects of the clinical care of patients.

Doctors perceived a negative consequence for their patients as a result of these performance stressors on them personally, a consequence consistent with the body of research, discussed in *Chapter 2: Literature Review* on medical practitioner performance and its mediating effects on patient outcomes. Participants spoke of being pulled away from individual patients to attend to other patients about to 'breach' the 4-Hour Rule, and repeatedly being asked to discharge or admit patients based on time-targets rather than need. Most described shocking circumstances in which time-targets were prioritised over the safe management of patients, particularly those facing discharge.

The overall consequences of the clinical dilemmas created by the competing demands of time-targets and individual patient care are twofold. Firstly, the predominant and overwhelming conclusion of the participants was that time-based targets are not actually set for the benefit of patients, with any systemic benefits being overwhelmed by risks, poor-quality outcomes and over-servicing at the individual level. Secondly, the doctors suggested that the targets are interfering with their ability to maintain a sense of control over their workload and their attention to the needs of individual patients in front of them. As noted in *Chapter 2*, a sense of loss of control over work environments is a potent antecedent to 'burnout' amongst physicians and hence poses serious long-term risks to good performance and the mitigation of medical errors, with direct adverse effects on patients.[691] [692]

Participant 2 succinctly described the general terms of the less jaundiced views about the NEAT when they said, "*some things can be solved quite quickly, and other things take time. And I think time is relative to the individual patient but also to the department itself*".

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[691] P Schattner et al, "Doctors' Health and Wellbeing: Taking up the Challenge in Australia", *MJA* 181, no. 7 (2004): 348-349.

[692] Williams et al, "The Relationship of Organizational Culture, Stress, Satisfaction, and Burnout", 203-212.

These data suggest that the 4-Hour Rule has had a lasting impact on doctors and their perceptions about their performance, consistent with the findings from other research in Australia and abroad on physicians' experiences of the impact of the 4-Hour Rule,limited as that research appears.[693] [694] [695] The findings speak volumes to the apparent lack of value of time-based targets in individual clinical experience, despite some evidence that quality can be improved and mortality can be reduced through the clinical service redesign on which the 4-Hour Rule was originally predicated.[696] [697]

The Australian Medical Association's *2015 Public Hospital Report Card* editorialises the data reported as part of the National Partnership Agreement, including the NEAT. The report concludes that Australian public hospitals continue to under-perform and lays blame for this squarely on inadequate funding and resources.[698] 'More funding and resources' is a broad stroke that says nothing of how such energy should be utilised. It begs the question of what these performance measures are actually shedding light upon within the complex health-care landscape of the Emergency Department, as a function of where and how to deploy the increased energy that would be made available from 'more resources and funding'. In the context of formulating a function for hospitals based on entropy, Tsallis has shown that increasing resources in a non-linear system would inevitably increase overall system entropy. By this logic, if the nature of the dynamics and structures of relations is poorly defined, then more resources may not actually improve the performance of hospitals or Emergency Departments if they are operating according to non-linear dynamics.

It is apparent, from the work of Sullivan and Staib in Western Australia, that improvements in time-based target achievement were based on improvements in localised system designs and interfaces, workforce design, workloads and workflows, and other whole-of-hospital reorientations and reorganisations. In their 2014 report on improvements at a 'poorly performing' Western Australian tertiary hospital, Sullivan et al

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[693] Stokes, *Four Hour Rule Program Progress and Issues Review*, 14-15.

[694] G Keijzers, "NEAT in Need of a Sweet Spot", *EMA* 26 (2014): 217-218.

[695] R Francis (Chair), *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry,* (London: The Controller of Her Majesty's Stationery Office, 2013).

[696] J Lowthian et al, "Redesigning Emergency Patient Flow with Timely Quality Care at The Alfred", *EMA* 27, no. 1 (2015): 35-41.

[697] C Sullivan et al, "The National Emergency Access Target (NEAT) and the 4-Hour Rule: Time to Review the Target", *MJA* 204, no. 9 (2016): 354.

[698] Australian Medical Association, *2015 Public Hospital Report Card: An AMA Analysis of Australia's Public Hospital System*, (Sydney: AMA Publications, 2015).

required implementation of 25 different reforms across Emergency Department internal processes, department–inpatient unit interface, hospital-wide discharge processes and performance monitoring to achieve significant wait-time improvements, reduce unplanned representations to Emergency, and reduce mortality rates.[699] The research team concluded that these findings demonstrate "the importance of robust governance structures, executive sponsorship, cross-disciplinary collaboration, regular feedback of NEAT performance data and major redesign of existing clinical processes, work practices and bed management operations". Clearly, success with time-based targets is manifestly more than just about measuring time.

The findings from participants in this phenomenological inquiry support the conclusion that Australian doctors are keenly aware of their roles in the productive functions of hospitals and Emergency Departments. In line with the doctors' concerns about the individual safety of the patients they treat, their overall perspective was described in terms of performance around the number of patients treated well, rather than the absolute number treated. Doctors described performance as intimately affected by their own personal circumstances, the physical environment of the hospital and the unique nature of each patient's presentation. All the doctors indicated that at times of overwhelming demand, there was a tendency to deprioritise time-targets in favour of 'getting it right' for the patient in front of them. Participant 1 was acutely aware of a sense of the counterfactual outcome of such behaviours: that is, the stress of excess demand ought to be mitigated by moving patients more quickly through the department, which would be better served by clinicians seeing more patients rather than withdrawing into a more blinkered view of immediate need. However, engaging with a more global perspective on supply and demand in the department appeared to come at an apparently unacceptable cost: the doctor's perception of the loss of a sense of safety about the management of individual patients, and an anxiety that risks were taken without proper consideration of the consequences.

A loss of sense of safety has secondary and important implications. Doctors reported being driven to continue to perform well when they were getting plenty of feedback that their work was of a high quality and satisfactory to patients' needs. Conversely, they were perhaps at times excessively influenced by the negative feedback on their practice and on the practice of their peers. Participant 2 described how a whole department began excessive ordering of costly and unwarranted tests on patients with back pain because of

[699] Sullivan et al, "The National Emergency Access Target", 354.

an unfortunate run of poor outcomes for one of the consultants in that department. This was further complicated by a general difficulty and aversion to holding others and themselves to account on performance issues. Strong hierarchical structures within the medical profession were identified by the doctors as a barrier to providing feedback to other doctors, especially to senior colleagues.

Some participants indicated that strong collective opinions among groups of doctors can have powerful institutional effects because of the way in which doctors privilege the information they receive and adhere to within the medical hierarchy. If change or adaptation is to be accepted, some of the self-defined characteristics of 'good doctors', such as the "*hero individual doing their own thing*" (Participant 1), would need to be moderated. However, in respect of maximising the best outcomes for individual patient care, participants overwhelmingly endorsed the value and power of respect and open communication among colleagues right across the different disciplines and roles within the hospital workforce.

This speaks to a quality of the clinical encounter which all the doctors described: trust. Building trust in words and gestures is clearly an explicit and central goal of a doctor's direct patient contact, to reassure the patient and build rapport, and second to allow for the intimacy of touch in the examination that follows. Trust constitutes an ideal condition within which action is taken. Trust extends to colleagues and institutions, upon which each clinician needs to rely in order to care for their patients. Threats to trust have immediate and problematic consequences. A lack of trust in colleagues appears to force doctors to assume much greater and more direct responsibility for individual patients, increasing their workload and cognitive demands. A failure to achieve adequate trust levels with patients compromises their willingness to consent to examination and investigation, while it may also interfere with effective clinical communication, and a patient's readiness to accept the uncertainty of their situation and manage their expectations.

A loss of trust at the individual level has much broader consequences. I have argued in Second Order Construct 8 that trust in a physician is in part the result of a patient's trust in the institutions in which they work: trust-in-legitimacy. Should a citizen fail to develop trust in their encounter within a hospital, and if enough have similar experiences, then trust in the institution may be diminished. This may then feed into future trust-in-legitimacy experiences of future patients, causing them to approach their care with greater

caution and circumspection. Finally, there is the potential social consequence, as individual trust and trust-in-legitimacy are extended to all social institutions. This is a two-way reaction as a loss of trust of social institutions, in general, may eventually erode the trust-in-legitimacy given to a health professional by a suffering patient. It will be the burden of the clinician to work even harder to build the necessary trust dynamic — which the participants identified as an important and central task — with their patients in settings where trust-in-legitimacy is diminished.

6.2.1 Validation of First Order Constructs

Ethical considerations prevented returning the First Order Constructs to the four participating doctors, due to issues of confidentiality and a changed working relationship with one of the participants. Validation of the First Order Constructs was instead undertaken by inviting 15 other doctors, with whom I was engaged in a face-to-face teaching session at a hospital in Queensland, to comment on the written summaries of the First Order Constructs. Doctors in attendance reported a strong sense of self-identification with both the constructs and the descriptive evidence from interviews provided in support of the constructs. This suggests some validity of the research in representing some generally shared experiences regarding the dynamics, challenges and privileges of medical practice in public hospital, and the perception of the 4-Hour Rule's impact on the patient-doctor relationship.

6.3 The phenomenological essences of clinical encounter

Phenomenology requires consideration of that which is essential and transcendental, the *evidence of the evidences*, about the phenomenon under inquiry. This is an important objective in the theatre of the current research question because of the substantial empirical evidence that the apparent benefits and value of improving timeliness of patient care are failing to flow through to the vast majority of Australian public hospitals, with an extrapolated death toll commensurate in parts of Australia to 50% of the road death toll.[700]

To that end, the Second Order Constructs arise from the illumination of the whole content and context of six years of research in the hope of more completely describing the lifeworld of experience to uncover the essential elements of clinical encounter, relational dynamics and their influence, and function of these in the complex system of

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[700] D Richardson, "Emergency Department Targets: A Watershed for Outcomes Research?", *MJA* 196, no. 2 (2012): 126-127.

the Emergency Department. The task was aided by a closer analysis of findings in the context of a critical realist philosophy of positioned-practices, causal powers, mechanisms, causal configurations and tendencies. The perspective surfaced a range of philosophical, structural and epistemological possibilities for the characterisation of the lifeworld of doctors, including entropy and complexity. Analysis from the critical realist perspective aimed to provide a more complete theory for the ontological nature of the clinical encounter and the hospital setting to assist in better understanding the impact of complex interventions such as the 4-Hour Rule in the complex system of the emergency room. In the absence of a strong precedent in the literature for an ontological description to support a critical realist analysis, empirical phenomenology proved advantageous with its grounding in a transcendental descriptive paradigm of the intersubjective nature of phenomena. The emphasis on eidetic elements in the act of description supported an identification of two important theoretical constructs for the structure of relations of the clinical encounter: the Second Law of Thermodynamics, and Lévinasian suffering.

Descriptive data from the interviews, and evidence and theory from a diverse range of other intellectual endeavour, revealed five potential eidetic elements of clinical encounter: Suffering, Entropy, Caseness, *Ichi-go Ichi-e* (inimitability with uncertainty) and Neighbour-Love (Safety). It will take some time, beyond the life of this project, to discover which, if any, remain resilient in the face of critique from those who share the lifeworld encompassed within the clinical encounter. From the perspective of physicians, the small validation exercise involving a group of doctors at a hospital towards the end of the project offers some positive indication that, even if not eidetic, these elements represent key descriptions of what constitutes the experience of clinical encounter.

Suffering was conceptualised as a final common pathway for the expression of physico-physiologico-psychic derangements that overwhelm homeostatic boundaries. These derangements are made sensible to the person through interoception: the capacity of the human carbon-based logic systems to monitor and respond to changes in homeostatic systems. Phenomenologically, action and reaction to suffering are both essential to being and also a manifestation of the ethical bond of responsibility to the Other. Suffering is thus understood to be intentional and originary, an eidetic essence of our being, as fundamental as entropy itself is to the universe.

Imaginative variations around the possibility that hospital Emergency Departments can be characterised in thermodynamic terms opened up a rich vein of possibilities for

making sense of the dynamics of clinical encounter, professional performance, and social and environmental contexts of health-care, and the impact of all of these on clinical outcomes. This explanatory model arose from deep reflection on what the purpose and meaning of suffering may be in human experience as it relates to the vast social investment in the biomedical model of health.

For a variety of reasons, defining caseness is perhaps one of the most vulnerable aspects of the complex structure of relations of Emergency Departments, and one of the most sensitive to time-based targets. Caseness reduces suffering to a taxonomy of biomedical concepts that may be both life-saving and soul-destroying. The doctors readily accepted that some patient cases are more easily deduced than others, an emotional-cognitive process involving 'script activation' in an ethically bound relationship of mutual trust. Doing this in under four hours for many common cases poses little challenge and the outcomes are predictably good. Participants indicated that in the setting of high demands and competing urgencies, however, coupled with inadequate environmental resourcing, the essential ethical and cognitive energies required to expertly define caseness may deteriorate.

At some point a compromise may occur: decisions on caseness are made with vastly inadequate levels of information, resulting in inappropriate management plans and interventions that increase the probability of harm. Participant 3 provided several examples for these types of compromises, as well as the strategies they used to try and reduce the frequency of them occurring.

In non-linear open energetic systems like clinical encounters in hospital Emergency Departments, the passage of time may (a) potentially improve doctors' ability to select optimal least-dissipative solutions to a phase-space or, indeed, (b) propel it towards more and more disorder. In and of itself, time does not specifically select caseness, but it may influence a doctor's ability to hold the uncertainty until caseness is clarified, or compel them to action in the absence of strong case attractors in order to arrest unsustainable entropic growth rates, such as in cases of massive blood loss. Finally, time may perversely drive poor decision-making as the goal of meeting a time-target begins to conflict with the unresolved issues of the specific clinical encounter that ideally require more time and energy, for characterisation and remedy. If enough pressure is brought to bear, as participating doctors attested to, the clinical needs of the patient and doctor can be subjugated by the goal of reaching a time-based target. In terms of complexity, the

conflict drives increasing instability to the point of bifurcation, which can result in a whole new set of complexities with which to deal.

6.3.1 Relief of suffering may be one of the primary outcomes for public hospitals

According to the 2017 *Report on Government Services*, produced each year by the Productivity Commission, the purposes of Australian public hospitals are:

to alleviate or manage illness and the effects of injury and rehabilitate where necessary by providing universal access to acute, non and sub-acute care along with emergency, outpatient and community care that is:

- *timely, affordable and accessible*
- *appropriate and responsive to the needs of individuals and communities*
- *high quality and safe*
- *well co-ordinated to ensure continuity of care where more than one service type, and/or ongoing service provision is required*
- *sustainable in terms of workforce, infrastructure, innovation and capacity to respond to emerging needs.*

Governments aim for public hospital services to meet these objectives in an equitable and efficient manner.[701]

The word 'suffering' appears only three times, twice in describing the concept of disease prevalence, and once when describing a person 'suffering from a mental illness'.[702] As noted in Second Order Construct 1, the word 'suffering' was not uttered once in the interviews. This is in stark contrast to this phenomenological inquiry which has uncovered the possibility that suffering is a critical final common pathway for an organism to express an immediate and urgent need for health-care intervention. In addition, in Second Order Construct 8 (Neighbour-Love), it is proposed that the physician's concern for the 'safety' of their patient, is perhaps a secondary phenomenon relating to their ethics of responsibility, neighbour-love, and the intentionality of suffering which draws patient and doctor towards acts to alleviate that suffering.

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[701] Steering Committee for the Review of Government Service Provision, *Report on Government Services 2017, vol. E, Health* (Canberra: Productivity Commission, 2017), 12.6.

[702] ibid. 13.18.

Demonstrated here is demonstrated a potential mis-alignment between measurement and reporting of policy-level indicators of public hospital performance and the actual relational imperative of the clinical encounter, one of the critical productivity components of the health-care landscape in a public hospital setting. This is not to suggest that those indicators selected and reported on by an authority such as the Productivity Commission are irrelevant, but instead, based on the findings in this research, it might be necessary to consider that there are additional data relating to objective issues such as suffering that require delineation and testing for their capacity to reflect effectiveness and efficiency in health-care productivity.

The Productivity Commission does report a complete and comparable data set for patient satisfaction, in which patients rate their experience in Emergency Departments and admitted hospital wards. Overall satisfaction with the three reported indicators — being listened to carefully, being shown respect, and having enough time with the health care professional — was above 80% across all jurisdictions and for Emergency Departments and wards.[703] These data are important given the correlation between patient satisfaction with clinical communications and health outcomes, including improved emotional health; symptom resolution; function; physiological markers such as blood pressure; and pain management.[704] [705] This finding is tempered by some other evidence that 'patient satisfaction' itself is a multimodal phenomenon in which the present state of a person's health is more influential that the change in their overall health status from admission to discharge, and in the specific setting of surgery, patient satisfaction only explains a small portion of the variance of outcomes. Other studies show that surgical volumes and hospital size predict satisfaction but not other quality measures.[706] [707]

Manary et al contend that these different dimensions of the summative patient experience and satisfaction can be actively controlled for, producing an overall improvement in the correlation between satisfaction, particularly with interpersonal communications with health-care staff, and clinical outcomes.[708] This inquiry has confirmed that doctors value

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[703] ibid. 12.24-12.25.

[704] M Stewart, "Effective Physician-Patient Communication and Health Outcomes: A Review", *CMAJ* 152, no. 9 (1995): 1423-1433.

[705] A Jha et al, "Patients' Perception of Hospital Care in the United States", *NEJM* 359 (2008): 1921-1931.

[706] R Kane, M Maciejewski and M Finch, "The Relationship of Patient Satisfaction with Care and Clinical Outcomes", *Med Care* 35, no. 7 (1997): 714-730.

[707] S Tevis, G Kennedy and C Kent, "Is There a Relationship Between Patient Satisfaction and Favorable Surgical Outcomes?", *Adv Surg* 49, no. 1 (2015): 221-233.

[708] M Manary et al, "The Patient Experience and Health Outcomes", *NEJM* 368 (2013): 201-203.

high-quality clinical communication, but that there may be a significant lack of embedded theory in discursive human communication in critical aspects of teaching and learning. This lack of theory may be limiting doctors' abilities to maximise the utility of information exchange and trust building in the dialogue of clinical encounter. This may be of significance given that the correlation between patient satisfaction and outcomes is lower or insignificant with physician communication, compared with the communication a patient has with their nurses.[709]

Patient satisfaction with communication of health-care professionals may be a partial proxy indicator of some patients' suffering. Berglund et al examined suffering as a dimension of the patient experience after collecting the lived-experience narratives of former patients and realising that dissatisfaction with care appeared to strongly align with a failure to relieve the patient's suffering.[710] Their research suggested that patients who who felt mistreated or mistrusted, who struggled for some autonomy in their health-care decisions, felt powerless, or who felt objectified and fragmented, actually experienced increased suffering as a result of their health-care experience. A number of these factors appeared to correlate with the patient experiencing poor communication with their health-care giver. More worryingly, the patients reported that they suffered and endured these experiences in silence, unable to communicate these experiences with their health-care team.

In nursing literature, there is a much stronger recognition of the role of patient suffering and well-being in the care and recovery of patients in hospital. Erikkson has been publishing since the mid-1990s on the phenomenological essence of suffering in the lifeworld of patients, and has called consistently for the existential aspect of a patient's experience, particularly their suffering, to more directly inform and reflect how health-care is conceptualised and delivered.[711][712][713]

Other research has considered the suffering that doctors experience in their work. Though modest, the body of literature examining suffering among physicians points to a

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[709] ibid. 201-203.

[710] M Berlund et al, "Suffering Caused by Care — Patients' Experiences from Hospital Settings", *Int J Qual Studies on Health and Well-being* 7, no. 1 (2012).

[711] K Erikkson, "Understanding the World of the Patient, the Suffering Human Being: The New Clinical Paradigm from Nursing to Caring", *Ad Prac Nursing Quarterly* 3, no. 1 (1996): 8-13.

[712] K Erikkson, "Caring Science in a New Key", *Nursing Science Quarterly* 15, no. 1 (2002): 61-65.

[713] L Fagerström, K Erikkson and I Engberg, "The Patient's Perceived Caring Needs as a Message of Suffering", *Journal Adv Nursing* 28, no. 5 (1998): 978-987.

group of human beings who are capable of awareness of the essence of suffering in the health-care encounter. Perhaps unsurprisingly, much of the literature relates to physicians working in oncology. As detailed in Second Order Construct 1, Casem et al described certain performance requirements of doctors during the clinical encounter to manage patient suffering.[714] Moryl et al noted that physicians experience their own suffering from internal experiences such as a sense of conflict about management choices and professional failure.[715] Despite this potential awareness, doctors in this inquiry did not once mention 'suffering', an absence phenomenologically as important as if it had been uttered a thousand times.

Mylod and Lee raised the possibility that a physician's inability to grasp or engage with patient suffering is the consequence of medically induced optimism in the spectacular success of the biomedical paradigm.[716] Lee's research suggests that taking clinical responsibility for 'pain', 'confusion' and 'anxiety' is more manageable than being responsible for the patient's totalised experience of 'suffering'.[717] Though the goal of trying to alleviate suffering for *all patients* in an Emergency Department may seem overwhelming, this is not of itself a reason to aim for anything less.

In health-care organisations, it is sometimes said that one cannot change what one does not measure, a controversial misattribution of an original quote from Deming that actually suggested the opposite:[718]

It is wrong to suppose that if you can't measure it, you can't manage it — a costly myth.[719]

However, the central idea is coherent: if a useful and accurate measure is available for an essential outcome, it is probably worthwhile that an organisation consider means for collecting data on it. In the case of suffering, Mylod and Lee suggest a model in which different domains of suffering are identified and worked through systematically to address those that are manageable, as shown in Figure 6.1.

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[714] Cassem et al, eds., *Massachusetts General Hospital Handbook of General Hospital Psychiatry*, 605–636.

[715] Moryl et al, *Suffering in the Patient, Family, and Physician*, 1117-1118.

[716] D Mylod and T Lee, "A Framework for Reducing Suffering in Health Care", *Harvard Business Review* (Nov 14, 2013).

[717] T Lee., "The Word That Shall Not Be Spoken", *NEJM* 369, no. 19 (2013): 1777-1779.

[718] J Hunter, "Myth: If You Can't Measure It, You Can't Manage It", *The Deming Institute Blog,* available at: https://blog.deming.org/2015/08/myth-if-you-cant-measure-it-you-cant-manage-it/ .

[719] E Deming, *The New Economics* (Cambridge Mass.: The MIT Press, 2000), 35.

Sources of Suffering in Health-care		
Associated with diagnosis	**Associated with treatment**	**Associated with health care delivery system dysfunction**
Examples		
Symptoms of disease including pain	Post operative pain	*Unnecessary pain resulting from failure to identify and treat the source*
Loss of functioning (temporary or permanent)	Loss off functioning (temporary or permanent)	*HospitaJ acquired conditions*
Fear or anxiety arising from the implications of the diagnosis for health and functioning	Fear or anxiety regarding outcome of treatment	*Fear or anxiety resulting from lack of coordination and teamwork, lack of respect shown to patient, and loss of trust in providers*
	Pear or anxiety due to unfamiliar processes, disruption in daily life, and loss of control.	*Misdiagnosis*
	Side effects	*Unnecessary waits*

Figure 6.1: Sources of Suffering in Health-care (*Adapted from Mylod and Lee*[716])

This framework reflects the conclusion drawn in this phenomenological inquiry that suffering is an essential element of the clinical encounter, reflecting overwhelm or derangement in physico-physiologico-psychic functions in the patient. Mylod and Lee indicate that the alleviation of suffering is a responsibility of health-care; that 'diagnosis' (more comprehensively characterised in this inquiry as caseness) can contribute to suffering; that the power of trust (which binds and reinforces the ethical knot of responsibility so that action can take place) may affect patient suffering; and that communication plays a central and critical role in avoiding or responding to suffering.

They conclude that:

Reliably providing evidence-based clinical care is essential to reduce patients' suffering — but it is not the only way. Indeed, excellent clinical care is "necessary but not sufficient". As discussed, care givers must also build trust and relieve anxiety... Skeptics may wonder if qualitative improvement in the control of anxiety, confusion, and fear is possible. In fact, such improvement is already well underway, as demonstrated by patient experience data collected from patients receiving care from hospitals, ambulatory groups, and other providers. This progress seems to be driven in particular by improvement in nurse

communication, pain control, and care coordination. Nevertheless, these data also demonstrate marked variability among providers in these measures, and opportunities for improvement for all.[720]

Findings from this inquiry suggest that — much like the categorical process of dehumanising the illness experience of the patient into disease processes and medical interventions — the safety movement, in part triggered by reports such as the IOM's 'To Err Is Human', may have resulted in a conflation of material safety issues and ethical safety issues, obscuring the ethical dimensions of the clinical encounter, and perhaps undermining doctors' feelings about, and identification with, their responsibility to the patient. Lévinas supposes that a tension lies in the unknowable totality of the Other through the necessity for representation via categories of that Other in one's mind, rendering the full truth of the Other invisible to the self. However, it does not dissolve responsibility, a proposition all too readily expressed in the potential suffering of the participants in this research, who described fitful sleep and anxiety because of the loss of a sense of safety which arises from their eidetic sense of love and responsibility for their patients.

Though the Other may forever remain invisible in its totality, doctors may still bring themselves much closer to the essence of the patient's lifeworld with an attitude of neighbour-love, in which the doctor acknowledges and bears witness to the truth that the patient's suffering is their suffering and demands the 'bread from our own mouths'.[721] I am reminded of Donabedian's own words, as the father of health service quality assurance:

Doctors and nurses are stewards of something precious... Ultimately the secret of quality is love. You have to love your patient, you have to love your profession, you have to love your God. If you have love, you can then work backward to monitor and improve the system.[722]

This depth of quality might more readily be achieved if the clinical encounter is approached as if it is the first and last meeting, ordained for its significance in the manner of *Ichi-go Ichi-e* in the tea ceremonies of Japan. However, at present, quality based on love is far from the picture painted by the collective experience of physicians in contemporary hospital settings. Instead, as Jauhur chronicles in his mid-life reflection on his career in medicine, evidence has mounted in the US that physicians report inadequate time spent

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[720] Mylod and Lee, "A Framework for Reducing Suffering in Health Care".

[721] Lévinas, *Otherwise Than Being*, 74.

[722] J Ayanian and H Markel, "Donabedian's Lasting Framework for Health Care Quality", *NEJM* 375, no. 3 (2016), 206-207.

with patients due to overwhelming increases in demands for more non-patient activity.[723] Subsequently, only 6% of American doctors report optimism about the future of medicine in America — a staggering and rather worrying signal of the state of affairs given how critical physician satisfaction is to the safety and effectiveness of health-care.[724]

In a national survey in Australia in 2011, medical practitioner career satisfaction was reported to be moderate to high in 85% of general practitioners and hospital doctors.[725] Satisfaction appeared to correlate most with doctors reporting a good support network, patients having realistic expectations, and having control over taking time off work when necessary.

This level of career satisfaction contrasts with the descriptions of the working environment by participants in this research. Comparing and contrasting the findings suggests that although there may be generalised positive predispositions among clinicians for favourable approaches to the complexities of individual clinical encounters, the power and influence of individual encounters, especially where 'things go wrong', may be much greater than their representativeness of overall clinical practices. This may be the result of 'affect bias', in which affective salience is differentially applied to past experiences that when triggered, as in script activation defining caseness in the biomedical paradigm, are likely to change risk-benefit judgments and can render individual decision-makers insensitive to real-world probabilities of outcomes.[726] A strong sense of shame, guilt or sadness attached to a poor outcome with a patient has the potential to change the decision-making of the doctor in all subsequent interactions where that memory is triggered. It may make them more risk-averse, but it may also cause them to be less attentive to emotional content in encounters as a way of avoiding unpleasant remembering. This is quite a 'rational' response, in the sense that it is both logical in terms of reducing the burden of emotional processing, and as a strategy for self-preservation. Decision-making abilities are described in models of thinking that propose a dual-process theory of information processing in everyday life where "people apprehend reality in two fundamentally different ways, one variously labelled intuitive,

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[723] S Jauhur, *Doctored: The disillusionment of an American Physician* (New York: Farrar, Straus and Giroux, 2015), 11.

[724] ibid. 9.

[725] C Joyce et al, "Australian Doctors' Satisfaction With Their Work: Results from The *MABEL* Longitudinal Survey of Doctors", *MJA* 194, no. 1 (2011): 30-33.

[726] P Slovic et al, "Affect, Risk, and Decision Making", *Health Psychology* 24, Supp. 4 (2005): S35-S40.

automatic, natural, nonverbal, narrative and experiential, and the other analytical, deliberative, verbal and rational".[727]

Though analytic thinking has ascendancy in the biomedical paradigm, it is no more rational than the more immediate and sometimes less observable experiential thinking of the feelings and affect. Zajonc has argued that analytic processes of the brain-stuff that bring any object to our conscious awareness present, first and foremost, an affective representation, only after which 'thinking' about the object or concept in consciousness then takes place.[728] This is something of a radical position. The relative infrequency of literature on the affective contributions to lifeworld encounters in medicine may be the result of some of the challenges he describes about this very human way of knowing:

- Affective reactions are difficult to verbalise because, at least in English, there are few ways of describing them in words, instead preferencing non-verbal modes of communication;

- Affective judgments tend to be irrevocable because they 'feel' valid;

- Affective reactions need not depend upon cognition as evidenced by the research that simply providing new facts about something often fails to change attitudes because of the strength of affective tagging to the pre-existing information; and

- Affective reactions can become separated from content, as in the inability to recall the details of a movie narrative despite a strong affective remembering of liking or disliking of the movie.[729]

Thus, what the research on practitioner satisfaction may not be discerning are the discrete and essential differences between what a doctor 'thinks' about their career satisfaction, and the more immediate, visceral, affective experience in the moments of clinical encounter. Zajonc's findings suggest these affective aspects may be vastly important influential factors in the immediate health and care decisions made in the patient-doctor relationship. Komesaroff has argued similarly, within the biomedical ethical discourse, that immediate and local phenomena of encounter shape the trajectory of the unfolding of the clinical encounter. He suggests that although there are influences in the ethical

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[727] Slovic et al, "Affect, Risk and Decision Making", S35.

[728] R Zajonc, "Feeling and Thinking: Preferences Need No Inferences", *Am Psych* 30, no. 2 (1980): 151-175.

[729] ibid. 151-175.

moment of clinical encounter from 'global' ideals of ethics — analytic constructs formed at a distance from the ethical moment at hand — it is the immanent 'microethical' moment emerging from the encounter between patient and doctor, filled with touch, voice, nuance, uncertainty, trust, fear and hope, that most potently activates and shapes the trajectory of the health-care journey of the patient and doctor alike.[730]

In addition to these theoretical and ethical considerations, the relationship between caseness, the micro-state of the patient and entropy is further strengthened in the work of Bienertová-Vašků et al, who propose mathematical models of Stress Entropic Load (SEL), in which stressors acting within and upon organs and biological feedback mechanisms critically impact on the *rate of entropy production* within the living system of the human.[731] As a result, they are able to infer a direct relationship between sudden changes in the rate of entropic increase in organs and physiological systems and the behaviour of sensate feedback structures within the hypothalamic-pituitary-adrenal (HPA) axis that signal stress. These same HPA structures are integral also to the experience of suffering.[732]

Participants expressed an abiding concern for the welfare of their patients, and frequently spoke in anecdotes about their patients' suffering which, due to many reasons, they sometimes felt unable to respond to fully. There was some indication of their own stresses and strains, perhaps even their own suffering, as a result of a loss of control of the work environment, excess demands clinically and emotionally, and problems in their personal lives. Understanding the effects of suffering at the interpersonal, intra-professional and organisational levels of encounter appears to improve both patient care and the productivity of health-care, with only modest financial costs.[733] This reflects improved performance at the individual and organisational level, and in the case of Press Ganey, an institutional surveyor of health-care in the US that uses measures of suffering, research has shown stunning and rapid turnarounds in performance.[734] The systemic

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[730] P Komesaroff, *Experiments in Love and Death: Medicine, Postmodernism, Micro Ethics and The Body* (Austin: River Grove Books, 2008), 25-34.

[731] J Bienertová-Vašků et al, "Calculating Stress: From Entropy to a Thermodynamic Concept of Heath and Disease", *PLOS One* 11, no. 1 (2016): e0146667.

[732] D Krashin et al, "Biology of Suffering", in *Suffering and Bioethics,* eds, R Green and N Palpant (New York: Oxford University Press, 2014), 106-120.

[733] G Kolata, "Doctors Strive to Do Less Harm by Inattentive Care", *The New York Times* (Feb 17, 2015), available at https://www.nytimes.com/2015/02/18/health/doctors-strive-to-do-less-harm-by-inattentive-care.html .

[734] M Porter and T Lee, "The Strategy That Will Fix Health Care," *Harvard Business Review* (Oct, 2013), available at https://hbr.org/2013/10/the-strategy-that-will-fix-health-care .

improvement observed by Press Ganey may imply a deeper insight if a core construct of this thesis is real.

Phenomenological inquiry undertaken in this thesis points to the possibility that suffering is an entropic function of the clinical encounter and the Emergency Department. In my imaginative variations on clinical equipoise, I suggested that elegant solutions in the clinical encounter involve a least dissipative, or lowest entropy, solution. With respect to the broader behaviour of Emergency Departments, research covered in *Chapter 2* suggests they can be characterised as complex adaptive non-linear systems of organisation. If each of these propositions is valid, then departments and clinical encounters share a fundamental influential feature in entropy. Suffering is hypothesised in this research to be an iconic indicator of high rates of entropic increase, and so it may represent a unifying signal of the entropy function of the system of clinical encounter and the system of the department. If this theoretical relationship exists, it offers some insight into why an active re-engagement with suffering in the health-care context might produce the efficiency and effectiveness improvements found in the Press Ganey evaluations.

Notwithstanding a hypothetical relation of this nature, to frame a problem successfully in settings of high uncertainty, risk and probabilistic outcomes is demanding of both a physician's cognitive and emotional decision-making capabilities. The participants in this fieldwork attest to the often overwhelming competing demands in the emergency room, and in the hospital generally, that tax their internal resources and cause retreat from situational awareness and any perceived noxious stimuli of the department. This includes their preparedness to discard time-based targets as a domain of their reflection-on-action performance review matrix.

If we also consider Zajonc's view that affective judgments tend to be irrevocable, even with the presentation of compelling new 'facts' about the value of a given concept or object, it is little wonder that time-based targets are a lower priority for clinicians ensconced in the infinitely complex clinical encounters of everyday practice, given the overwhelmingly negative views they hold about the targets. As described in their experience, the 4-Hour Rule is a burden of administration that bears little correlation with good outcomes for patients. The evidence from Australian hospitals in which 4-Hour Rule targets are most successfully achieved suggests that target performance is a proxy for more systemic clinical service redesigns that improve the ability of Emergency

Departments to interact with whole-of-hospital systems, including wards, diagnostic services, and management.

6.3.2 Clinical equipoise: Elegant solutions in complex phase-spaces

Based on the Second Order Constructs discussion and earlier literature review, I hypothesise that improvements in whole-of-hospital systems and processes increase the likelihood of finding least dissipative solutions to high entropic states at both the individual and collective levels of hospital organisation, something described by the participating doctors as 'when things go right'. Things 'going right' may be a colloquial statement about elegance, an evoked totalised pre-reflection on that which is given, and as such is not surprisingly described in *feeling* terms. Given the hypothesis that elegance is also a recognition of a least dissipative solution in a complex entropic system, improved whole-of-hospital organisation and processes, and finding clinical equipoise may have iterative positive feedback to the overall decrease of the rate of entropy production in the suffering patient, and therefore to the systemic entropy of the hospital as a whole.

Least dissipative solutions, so-called elegant in this thesis, are predicated on a new ontology of the structure of relations in the clinical encounter and its context in an Emergency Department based on manifolds of phase-space over which multiple solution trajectories may form, some more or less dissipative. Instead of trying to reduce solutions to singularities on a phase-space using sets of deterministic interacting 'variables', it may be more fruitful to consider the mechanisms through which cause and effect are manifested as attractors and controllers across the whole of a performance manifold of the phase-space that can increase or decrease the probabilities of different solutions.

Such a worldview accommodates the profound insights of *Ichi-go Ichi-e* for all clinical encounters. In mathematical terms of phase-spaces, even for classical systems with some potential for deterministic description of trajectories from initial conditions to end-points, 'internal resonance' within the system ensures that for all practical purposes recurrences do not generally occur within a finite time.[735] Such internal resonances are highly likely in large phase-spaces like those of macroscopic systems, and as Prigogine demonstrated, these processes enforce a flow of time consistent with our phenomenological experience of it, as well as limiting the concept of the wave function, thus avoiding the issues of

[735] L Reichl, *The Transition to Chaos: Conservative Classical Systems and Quantum Manifestations* (New York: Springer Science & Business Media, 2013), 4-5.

wave function collapse and the measurement problem which would otherwise confound our phenomenological experience.[736]

Predicting end-states in manifold complex systems in which inimitability and some uncertainty exist would require exponentially more data as time flowed forward. The further into the future one wanted to predict an end-state, the more impossible it would become to collect the amount of data required to predict outcomes.[737] Instead one would require some way of increasing the probabilities of certain outcomes, based on manipulation of attractors and controllers in a complex phase-space manifold.

Fortunately, in the complexity of very large non-linear phase-spaces, such as Emergency Departments and biological systems, there exists the possibility that the system exhibits tendencies in the flow of solution trajectories over time. For large systems a long way from equilibrium, as has been hypothesised of both living structures such as humans and their social constructs such as hospitals, probabilities tend towards order, and hence greater predictability, via the dissipative structures and reciprocal relations of energy transformations attendant to the Second Law of Thermodynamics. With the right observations and information about dissipative structures and reciprocal relations, it may be possible to nudge and control parameters within the system to favour preferred trajectories,[738] which in this thesis represents least dissipative, elegant solutions.

Hence, it may transpire that variables, while decomposable in terms of pedagogy, are no longer conceivable as independent and deterministic. Instead the inquirer faces the difficult challenge of defining and measuring the nature and function of reciprocal relations and dissipative structures related to the variables of interest, in order to make sense of the factors that favour different solutions on a performance manifold within a structure of relations as the basis of ontology.

As a consequence of this change in perspective, the relief of suffering may have two related consequences. Firstly, suffering can be viewed as a biological imperative given its signalling of potentially lethal rates of entropy production associated with underlying derangement of embodied functions and overwhelm of homeostatic boundaries within a

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[736] I Prigogine et al, *The Behaviour of Matter Under Non-Equilibrium Conditions: Fundamental Aspects and Applications. Progress Report* (Austin: University of Texas, 1990), 1-3.

[737] P Dizikes, "When the Butterfly Effect Took Flight", *MIT Technology Review* (Feb 22nd, 2011), available at https://www.technologyreview.com/s/422809/when-the-butterfly-effect-took-flight/ .

[738] J Nicolis, *Dynamics of Hierarchical Systems: An Evolutionary Approach* (Berlin: Springer-Verlag, 2012), 3.

living substance. Secondly, in a Lévinasian worldview, suffering is an eidetic and *a priori* condition of human experience and social organisation, calling as it does on the responsibility for the Other. Suffering signals and reflects an ethical and biological duumvirate of mechanisms, causal powers and tendencies which share an energetic foundation in the function of the rate of entropy production across the system in which they operate. This duumvirate makes meaning of the knowledge that success and quality in medical practice is born of both science and humanity.

6.3.3 The ethical and biological duumvirate in medical practice united by suffering

An ontological proposition at the core of this inquiry — that suffering may be the essential phenomenon of rapid rates of entropic increase in the embodied substance of the human being, itself a non-linear system susceptible to the laws of modern thermodynamics and complexity — offers a potentially radical way of describing a synthesis of 'science' and 'humanities' in the practice of medicine.

The phenomenological investigation has indicated significant and robust inferences that propose that empirical determinism in medical sciences *and* ethical enactment of relational dynamics of human encounter share a critical and central goal. Their unification proceeds on the basis of a shared fundamental element, entropy, and its reversal in the encounter. Recovery from suffering, a totalising phenomenon resulting from the return to an entropic steady-state of least dissipation, can occur as a function of the whole structure of relations within and through which the clinical encounter is constituted and assembled from ethical and material parts. Under this proposition, resolution of overwhelming entropic increase can be achieved through the mechanisms and powers of biomedicine *and* relational ethics.

This common grounding makes some sense of what doctors bear witness to in their daily practice in hospital Emergency Departments. The participating doctors described that their performance was influenced by a range of internal and external factors that impacted both their ability to manage cognitive and intellectual tasks as well as the relational and communicative dynamics in clinical encounters. The doctors were unanimous in their views that while their technical expertise was important, it was not enough to guarantee good-quality health-care. They made a number of observations about themselves and their colleagues that clearly pointed to an awareness that in the dynamic environment of the Emergency Department, the best health-care they provide is a function of their performance both as interlocutors and technical experts.

Balling has described a consequence of a unified approach to the suffering of patients as the 'overall diagnosis', which makes meaning of the 'traditional' biomedical diagnosis and management in the context of the patient's whole lifeworld. In this thesis I have reinterpreted and generalised the context of the medical professional's obligations and expertise in terms of caseness, while recognising the (perhaps inevitable) ethical limitations that the Western tradition of medicine may imply with the categorisation and disembodiment of the Other in making sense of caseness. That is to say that while the empirical reductionist methods of research have delivered 'spectacular' success in many aspects of health-care, it may come at the cost of making meaning of the lifeworld of patients and diminishing the humanity of both doctor and patient at the same time.

As an extension of their experiences of themselves and their colleagues in technical and communicative domains, the doctors frequently noted that one of the key outcomes of the relative strength or weakness of technical or interpersonal performance was trust, both in the teams in which they worked and in the systems and processes that supported them institutionally. First Order Construct 8 (Trust) appeared as a result of these descriptions in the interviews. It speaks to these doctors' awareness that explicit efforts at trust-building within the clinical encounter, and between colleagues, are an important element of the foundation for taking action.

Second Order Construct 6 (Trust and Trust-in-Legitimacy) discussed the possibility that trust is both a mechanism and causal power within the structure of relations of the Emergency Department, operating across different scales, like a fractal, in the health-care setting. From within the clinical encounter, to within the teams working in a hospital department, and through to the trust citizens place socially in the institutional authorities empowered to deliver health-care, trust creates conditions of contact between manifolds which "can transform a situation and free the persons involved from being bounded by their own matters" within which a mutuality of decision-making and action are made possible.[739]

However, it was also shown that trust is not necessarily an eidetic element of the clinical encounter. Instead it may represent an ideal manifestation of the deeper essential subjective knot of self-Other responsibility, born from the Lévinasian worldview of the presence of ethics even before the encounter. In this context, trust can be characterised as a boundary condition across which energy, including entropy, is transmitted into the

[739] Saevi and Eikeland, "From Where does Trust Come", 89-95.

performance phase-space of the clinical encounter. When operating effectively, it suggests to the actors who encounter each other on the performance landscape that there may be some common purpose and intention between patient and doctor, which predicts a more favourable trajectory. Trust may not be essential for the success of health-care interventions and care, but in the theoretical complexity manifold of an Emergency Department, a rapidly changing system of causal configurations of actors, agencies, discourse and technology, trust may promote a powerful tendency towards actions that favour greater likelihoods of recovery. Such trajectories, in terms of the entropy function, can be influenced favourably by serious attention to both the biomedical and the ethical context of encounter.

6.3.4 Clinical communication may include enthymemes

The exchange and transmission of information are critical functions of the patient-doctor relationship, and a number of models exist within the clinical communication skills training discourse to help frame a systematic approach for doctors to effective communication. However, explicit evidence of the influence of linguistic theory as a basis for skills training, development and evaluation is limited within the literature.[740] [741] The linguistic dynamics evidenced in participant interviews, as well as explicit commentary on the nature of communication with their patients, suggest that models of 'effective communication' may not reflect all of the real dialogue subtleties of argumentation which form the basis of clinical dialogue between patient and doctor. More importantly, enthymemes, incompletely formed arguments that include innuendo, surfaced as a mode of dialogue in which meaning-intention and meaning-reception may be 'softly' tested between interlocutors. Other meanings may also be buried within the apparent superficiality of words.

Much as the deductive, positivist paradigm has medicalised the ideas of truth and 'reality' in the broadest sense of the universe of medical practice, this perspective may also have shaped how knowledge has developed about effective communication in medical encounters. Participants were aware that much more than the words related to categories and definitions of medical pathologies and syndromes was exchanged in communication with their patients. The art of argumentation may be important, so learning about

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[740] J Kee et al, "Communication Skills in Patient-Doctor Interactions: Learning from Patient Complaints", *Health Prof Ed* (2017), in press available online at https://www.sciencedirect.com/science/article/pii/S2452301116301225 .

[741] S Li et al, "Using Linguistic Methods in Clinical Communication Education", *AMEE MedEdPublish* (2016), available online at https://www.mededpublish.org/manuscripts/617 .

pragmatics such as enthymemes may equip doctors with even more effective skills in building rapport and trust as the foundation for action, alongside the traditional goals of accurate diagnosis and patient participation in care.

Although identified by doctors as critical to success, effective communication and nuanced understanding of argumentation with enthymemes are not essential elements of the clinical encounter. They may instead operate as meliorisers and optimisers, much like trust, which could have, in individual clinical encounters, significant positive effects on both patient and doctor. Effective communication and argumentation may reduce the stresses and workloads of doctors in Emergency Departments by better equipping them with the skills of trust building and persuasion to work with their patients towards mutually agreeable outcomes. Effective communication appears to facilitate development of caseness and, in the context of information entropy, may safeguard against increasing rates of entropy production.

However, these meliorising functions appear to be ideal rather than eidetic. Many instances of effective clinical medicine and even care can occur in situations in which the art of argumentation plays only a small or an insignificant role, such as in cases of unconsciousness or severe respiratory distress, in which patients are unable to engage in dialogue. Other forms of effective communication and trust building can be employed in these situations, further indicating that understanding how to make sense of enthymemes and other dialogue, while potentially ideal, may not be eidetic in the phenomenological sense.

6.3.5 Trust and clinical equipoise may not be eidetic

Trust was frequently cited by participating doctors as one of their goals and responsibilities within the patient-doctor relationship. In Second Order Construct 6 (Trust and Trust-in-Legitimacy), imaginative variations on trust indicated the importance of trust as a condition and context for action to take place. However, while trust may be an ideal condition within which health-care takes place, it was found to be not *essential* to the function of health-care. Instead, trust may be likened to an indicator of the strength and durability of the more essential elements of self-Other responsibility and neighbour-love. Trust may reflect awareness of lower entropy clinical scenarios in which the greater certainty of outcomes shared between patient and doctor increases the strength of self-Other responsibility and safety. It is not difficult to entertain many situations in which

trust is absent (the unconscious patient), or withheld (the psychotic patient), and yet even in these conditions health-care can unfold with good outcomes.

Trust is a well-researched domain of medical research. However, the conceptual model of trust *as a primary phenomenon* of effective patient-doctor relationships may be in need of critical re-evaluation and theory development. This inquiry suggests that its importance in health-care relationships relates to underlying, more fundamental essences of the encounter. Trust may emerge from a living experience of responsibility for other and neighbour-love, which form the authentic grounding of relations between patient and doctor. From a critical realist perspective, trust might be defined as a mechanism, or as an emergent tendency within a causal configuration when the relations and causal powers of the agency of doctor and patient have aligned adequately. In this characterisation trust is again phenomenologically contingent on a set of more fundamental phenomenological elements. Hence, trust should remain a critical goal of the clinical encounter, and between individuals and institutions in terms of trust-in-legitimacy, but its presence or absence may be a signal of more fundamental dynamic issues at the ethical and biological levels of encounter.

In a similar way, clinical equipoise may itself be contingent upon caseness and the dynamics of inimitability with uncertainty, rather than expressing an essential element of the clinical encounter. The importance of clinical equipoise is no less diminished given its relation to optimising, or at least meliorising, solutions across a complex phase-space, but like trust, while it is ideal it is not essential to the performance of successful health outcome trajectories. The concept of elegant solutions formed part of the idea of clinical equipoise, in that clinical equipoise was posited as the ability to resolve least dissipative (elegant) solutions in complex phase-spaces. Under imaginative variations, a relation to fractality and the implications for solutions of a manifold phase-space were observed. In the opinion of DeLanda, the existence of complexities of manifold phase-space and fractality is contingent on the very possibility that elegance exists and can be observed in the material world.[742] If elegant solutions are the outcome of clinical equipoise, this would suggest that equipoise itself is an unavoidable consequence of complexity. However, this conjecture is in need of further critical and rigorous explication to determine its validity.

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[742] M DeLanda, "Material Elegance", *Architectural Design* 77, no. 1 (2007): 18-23.

Marcus reminds us, however, that even in situations of apparent elegance in nature, such as the development of the fruit fly, elegant explanations may be informed by inelegant actualities. When a complex system is decomposed, one risks failing to see that what may appear inelegant or inefficient is in fact a factor in the system's overall elegant execution. Trust and clinical equipoise may not be phenomenologically eidetic in terms of the essential nature of clinical encounter, and the factors from which they manifest may be indistinct or messy, but as a function of their presence in the context of the whole of the clinical encounter, each may represent vital indicators of the overall health of both the ethical and biological aspects of patient and doctor.

CHAPTER 7: Conclusions and Future Directions

7.1 Overview

A summary of findings and recommendations for future research is presented in the chapter, alongside a critical review of some of the limitations of study design. The methodology and research findings are considered in the context of a validation and trustworthiness framework, with particular emphasis on the challenges presented by qualitative research methodologies.

7.2 Critical realism and clinical encounter in the Emergency Department

Discussed in *Chapter 2: Literature Review*, the task of making sense of how the 4-Hour Rule impacted on doctors' perceptions of their relationships with patients in the clinical encounter was hampered by a lack of evidence to support a rigorous theoretical construct for the ontology of clinical encounter in the context of an Emergency Department. Instead, prior research indicated that a set of assumptions based on positivist deterministic principles has steered thinking on how a complex intervention such as the 4-Hour Rule might exert influence over the functions of relations between actors, agencies and technology.

As an exploratory methodology, an empirical phenomenological inquiry based on the descriptive phenomenological methodology has rendered a picture of the structure of relations within clinical encounter and the department that suggests a complex adaptive organisation of relations requiring a complexity description. Descriptive phenomenology rests on the predicate that a structure of meanings and theory can describe a structure of objects and objectual relations that exists in an intersubjective plane. The structure of meanings and theory can be generalised through the sense-making and meaning-making of the descriptions of experience with phenomena in which, in the intersubjective plane, the theory of structure and meaning related to objects can be formalised to theories substituting 'object' with 'concept of object'. The theory structure persists in relation to 'objectual correlates', where the place of 'concept of object' correlates across different phenomena because the structure of relations of the different phenomena share a similar description of relations in the intersubjective theory structure.

The methodology applied in this thesis demonstrates that there may be a continuity of theory structure, described through the empirical phenomenological approach, with an

interpolation of the phenomenological findings into a formalised critical realist ontology, between the ontological nature of clinical encounter in the Emergency Department and other established physical and mathematical descriptions of complex phenomena.

In a turn to critical realism as the grounding for an ontological framing, the findings from First and Second Order Constructs resolved strongly in alignment with a theory structure, referred to as a structure of relations throughout the thesis, presented in graphical form in Figure 7.1.

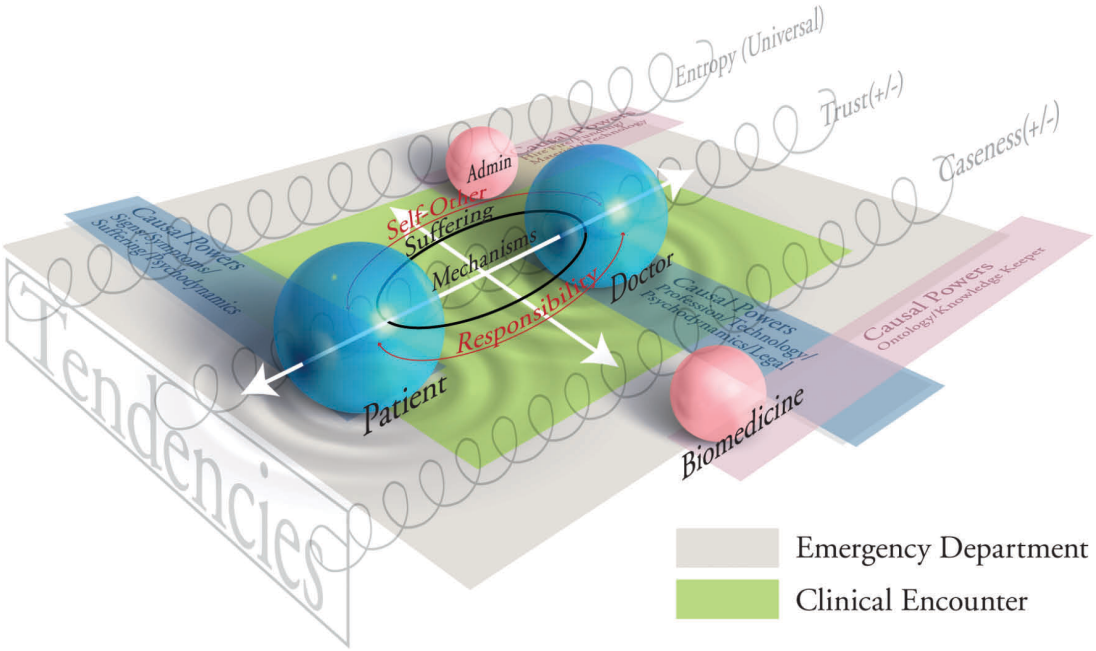

Figure 7.1: A Theory of Structure for a Critical Realist Ontology of Clinical Encounter in the Emergency Department

Using the organising principles of critical realism set out in Figure 5.1, construction of a descriptive theory of structure of the organisation of Positioned-Practices (Patient, Doctor, Biomedicine, Administration) within the Causal Configurations (shaded boxes: grey = Emergency Department; green = Clinical Encounter) of clinical encounter and the Emergency Department can begin. One can hypothesise the nature of the Causal Powers and Mechanisms through which action, reaction and reorganisation take place within the clinical encounter in an Emergency Department. Tendencies, such as the universal increase in entropy, and the bipolarity of trust and caseness identification, are hypothesised to exert influence over the momentum and direction of the unfolding relational dynamics, influencing every aspect of the structure and dynamics of relational elements.

In the clinical context, some of the mechanisms by which causal powers are actualised within the configurations include the transformative and transmutative actions of drugs, talking therapy, radiological technologies, the surgical blade, and ubiquitous instruments such as the stethoscope. Administrative mechanisms include many of the discursive objects such as protocols, policies and rostering, all of which transmit and modify the relations between actors and agencies and shape access to technology and other resources upon which the clinical encounter may depend.

For patient and doctor, a number of potential mechanisms were explored in the findings and discussion, including the eidetic elements of suffering and self-Other responsibility, from which other causal powers may emerge. Literature covered in *Chapter 2* suggests that there are a very large number of potential mechanisms within doctors, such as personality and cognitive organisation, and within the external environment, such as physical space and beds in hospital departments, through which the densely interspersed causal powers of patients, doctors, administrators and other health-care workers are actualised and exert influence over the unfolding of the clinical encounter.

Making sense of this multitude of people, processes, structures and power dynamics required a change in paradigm, as discussed in Section 3.2.2. My theory of structure, as shown in Figure 7.1, is hypothesised to share phenomenological objectual correlates with a number of important physical and mathematical theory structures, including complexity theory, manifold theory and modern thermodynamics. The Second Order Constructs and Discussion chapters have set out a logic using inferential arguments primarily based on theoretical and representational generalisations (see Section 3.5.1.2) for a correlation of the structure of relata and their mechanisms of influence between the ontological nature of the causal configurations of clinical encounter and Emergency Departments and entropy in modern thermodynamics of large non-linear systems, far from equilibrium.

As such, this theory of the structure of relations constitutes a model based on a descriptive exploration of phenomena for the possible structure of relations. It requires further research to determine whether or not the theorising reflects the ontological nature of the phenomena of clinical encounter in a hospital Emergency Department.

7.3 The challenge of modelling solutions in complex systems

It is probably impossible to measure all the relations, feedback, controllers and attractors — call the phenomena what you will — operating in a system as enormous as a hospital Emergency Department, or perhaps even in a system the size of the clinical encounter. However, certain global optimisation methods exist that might theoretically simulate the trajectories of complex systems even without a complete understanding of initial conditions.[743] Socolar makes the observation that in biological systems, "a healthy dose of intuition" is required when approaching the modelling of complexity,[744] an idea that sits comfortably within Jaynes' concept of entropy, discussed above.

Proposing deterministic models that test dependent and independent variables in a dynamic system like a human encounter may not ever provide the level of utility required for understanding the truly dynamic and complex manifolds of internal and external factors impacting on the patient-doctor relationship and its outcomes in the clinical encounter across the phase-space of the Emergency Department. Instead, one is challenged to grapple with 'computative monsters' in search of realistic models of dynamic relationships between personality; identity; stress, appraisal and coping; communication skills and shared decision-making; script activation and caseness identification; trust and trustworthiness; and the myriad other ethical, interpersonal and diagnostic phenomena that make up the totality of the clinical encounter and its context.

It is further possible to conjecture that as a consequence of some of the deterministic paradigm that dominates biomedical practice, such as the input-throughout-output model in Emergency Department overcrowding discussed in section 2.3.1.1, the National Emergency Access Target has resulted in an emphasis on a system dynamic, time, that, even in sophisticated feedback models is an oftentimes volatile feedback object that can cause unstable and unhelpful systemic responses. Penkovsky uses the everyday example of standing under a shower when the tap is first turned on and discovering the water is too cold, thus making an adjustment to the taps, which over time results in an over-correction such that the water becomes too hot.[745] A complex system with feedback dominated by time variables without reference to a highly developed model of optimised

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[743] C Carver and M Scheier, "Control Theory: A Useful Conceptual Framework for Personality-Social, Clinical, and Health Psychology", *Psychological Bulletin* 92, no. 11 (1982): 111-135.

[744] T Deisboeck and J Kresh, eds., *Complex Systems Science in Biomedicine* (New York: Springer-Verlag, 2007), 133.

[745] B Penkovsky, "Theory and Modeling of Complex Nonlinear Delay Dynamics Applied to Neuromorphic Computing", *Artificial Intelligence Conference,* Université Bourgogne Franche-Comté (2017), thesis available at https://hal.archives-ouvertes.fr/tel-01591441/file/PhD_thesis-Penkovsky-arch.pdf .

function may be observed to fluctuate in unpredictable or uncontrollable ways, just as the water flowing through the pipes of a shower may unfortunately shock or scald the unsuspecting human standing under the outlet.

The evidence shows that the few institutions in which the NEAT is consistently achieved *and* in which the intended improvements in morbidity and mortality have been demonstrated are those hospitals in which clinical service redesign of the whole hospital was undertaken as the fundamental basis for reducing the individual episode of care time. This is consistent with the work of systems design theorists who have extended the success of quantitative, deterministic feedback control theory in engineering to non-linear dynamical living and social systems using models such as pattern control theory.[746] In clinical service redesign, the whole ecosystem of a hospital and its exogenous inputs and outputs must be critically reviewed and evaluated in order to determine the patterns and models for improved efficiency and effectiveness. As a consequence, the redesign can be expected to reduce the time spent by the cohort of patients moving through the Emergency Department.

The phenomenological approach to the complexity of the clinical encounter, as an exploratory method for identifying potentially influential dynamic influence and effects, provides some tentative direction for more complete understanding of how exogenous control factors such as time-based targets may impact on critical functions of a health-care system. These impacts may be destabilising and increase rates of entropy production given the evidence in other control theory fields of the nature of time-based feedback on complex systems: these targets cause overshoot and instabilities that are ultimately detrimental to the optimal function of that system.

Marcus introduced the idea that nature is the great melioriser. Rather than a goal of optimisation, health services evaluation may be better served with a pragmatic approach to the design and implementation of complex interventions such as the 4-Hour Rule that reflects other dynamic complex hierarchical and integrated natural systems. It requires new ways of theorising based on deep and abiding encounter with the complex phenomena of interest. Re-engaging with theory building is fundamentally supported within the critical realist paradigm. Imaginative variations within the eight Second Order Constructs revealed strong inferences in support of the characterisation of the Emergency Department, and the clinical encounters within it, as causal configurations in

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[746] W Fey, "Organizational Change from a New Perspective: Pattern Feedback Control in Human Systems", in *Proceedings of the 20th International Conference of the System Dynamics Society* (Palermo: System Dynamics Society, 2002), 65.

which agents take up roles and powers within positioned-practices that imbue the structure of relations with its energy and drive to evolve over time. At a fundamental structural level, the energy transformations within these causal configurations appear to potentially mirror the nature of energetic transformations and transmutations in non-linear dynamic systems a long way from equilibrium. If this theory is borne out, new insights from modelling the causal configurations of clinical encounter in Emergency Departments using principles from non-linear modern thermodynamics research may offer exciting new ways to improve health-care in hospitals.

The mechanisms enabling action and effect within the structure of relations appear to be diverse, and may include the essence of a relation bound in a Lévinasian ethical subjective knot of self-Other responsibility, in which the suffering of the patient is at once the calling of the doctor towards the patient, and of the patient to the doctor. Trust and pragmatics of argument and discourse strengthen or hinder the depth of knowing within the knot of responsibility of patient and doctor. In turn, doctor and patient seek to make sense and meaning of the signals of suffering, predictably and predominantly within the biomedical context, which from a Lévinasian worldview, threatens true knowing, as caseness is defined in categorical terms that mask the essential truth of the Other. Despite this threat, this biomedical imperative did not appear to blunt the ethical boundedness of doctor and patient, as the participants within the research attested to repeatedly in their explicit concerns for the real safety of their patients, a sanitised and less emotionally intense representation of Neighbour-love.

Modelling of a health-care clinical encounter is, in critical realist thinking, a modest affair given the inherent fallibility of the ability to know the true complexity of the world of medical practice. There is a need to accept that in the absence of deterministic cause and effect, at best the tendencies of different causal configuration to move towards one or other outcomes might be described. This philosophical perspective rests comfortably alongside the inferences proposed within the Second Order Constructs that suffering may be a phenomenological entity arising from the entropy of a destabilised or deranged physico-physiologico-psychic homeostatic function of human biology and being.

So, in the vein of Socolar's observation, with a healthy dose of intuition, gleaned from an empirical phenomenology inquiry into doctors' experiences of the clinical encounter and its context in hospitals and impact from the 4-Hour Rule, there is a possibility that the complexity of these phenomena may be mirrored or described within fundamental laws

of nature involving performance manifolds tracing across non-linear complex phase-spaces involving thermodynamic energetics. Simulations, as opposed to artificially decomposing the structure of relations within a positivist empirical research method, informed by much more detailed understanding of the expressions of entropy within the health-care environment, and the reciprocal relations and dissipative structures that give rise to the capacity of the system to 'reverse' the flow of entropy, may better serve the goal of designing meliorating strategies and interventions in the performance of hospital Emergency Departments so that, at the very least, the burden of suffering among patients *and* clinicians is made more manageable and the recovery of a meaningful life is supported.

7.3 Methodological limitations

7.2.1 The nature of complexity and complex systems

The first limitation of this inquiry, arising from the turn to complexity and away from a positivist paradigm for the research, is accepting the inherent uncertainty and potential unknowability of the phenomenon of the clinical encounter and its presence in a complex universe. Critical realism recommends modesty with respect to any epistemological conclusions drawn from scientific inquiry fundamentally as a result of an ontology in which causality is non-linear and emergent. In attempting to describe the phenomenological eidetic truth of the elements of encounter and how they relate to the evolution of the complexity of clinical encounter over time, one must begin from an arbitrary 'starting point'. The moment of observation within the evolution of the systems under inquiry may have been determined by unobservable phenomena, the information about which is lost in the entropy of time.

With evolution over time in complex systems, periodicity and pattern identification may be determined with repeated observations over scales of time estimated from informed guessing. From the phenomenological essentialist perspective, the truth value of the reported eidetic elements is contingent upon the resonance of the elements in the intersubjective space, and so over time the contents of this thesis are tested and retested in the lifeworlds of doctors and patients, and only those resilient to further reduction ought to survive.

In a complexity paradigm, the spatiotemporal location of this project also presents limitations. Individuals and organisations have the capacity to adapt and evolve over time, such that what has been represented in these data is, already, the past. Social, political and

economic forces may already be influencing the ways in which doctors view the 4-Hour Rule and its impact on the patient-doctor relationship. This work represents a snapshot in time.

As a function of these limitations, the generalisability of findings is a modest endeavour. Eidetic elements, according to the logic of phenomenology, ought to persist beyond the four participants and into the intersubjective space of generalisability. Some small validation of their resonance in the lifeworlds of other doctors has been undertaken, but the persistence of the elements will only be determined in time in the full judgment of those engaged in clinical encounter, and for only as long as the phenomenon itself is stable. We may find, in time, that the phenomenon of clinical encounter itself undergoes change, thus rendering the inquiry an artefact of history.

7.2.2 Qualitative research reliability and validity limitations

Morse set a challenge for qualitative researchers in health science to be more explicit and descriptive with respect to insights, inferences, evidence and validation used in their work, not only as part of rigorous practice but also for the benefit of quantitatively trained colleagues. However, this is not an invitation, in her view, to subjugate qualitative research to "quantitative standards to evaluate qualitative research".[747] As such, the methods and standards for measuring the reliability and validity of this inquiry are different, as detailed in Section 3.5.2, above.

Using the widely cited guidelines from Elliott, Fischer and Rennie, designed for "a broad range of social science qualitative researchers",[748] I have noted the following limitations specific to qualitative research:

- *Owning one's perspective*: As an active observer within the project, I have been as transparent as seemed fit to ensure that the influence I brought to bear on the work is at least visible to other observers. However, it is implausible that the constructions and associations of my subjective experience have not influenced what has been deemed significant for illumination and what has remained obscured. To other eyes, minds and disciplined scholarship, the lifeworld of the participants may have resolved a different picture. Evidence of the 'slipperiness' of keeping to the goal of intersubjective description is found in my occasional use of the collective pronouns 'we' and

[747] Morse, "Insight, Inference, Evidence, and Verification", 99.

[748] Elliott, Fischer and Rennie, "Evolving Guidelines For Publication Of Qualitative Research", 215-229.

'us' ,which, on careful inspection over the period of writing, betrayed occasional lapses into 'we' meaning doctors including me. Such lapses were also useful, however, in turning careful reflection onto consideration of the question of from where an idea or a proposition may have arisen. Was it from the data or from myself? A number of contending First and Second Order Constructs were ultimately abandoned because of these slips and the awareness that each originated from my personal experience.

- *Situating the sample:* Descriptions of the life circumstances of participants in the research were limited to only basic demographic data about their gender and position within an hierarchy of medical professional development. For the reader, this does not allow a rich understanding of participants' individual circumstances and how unique aspects of these circumstances might have influenced their experience with the 4-Hour Rule. There may be shared subtleties within the lifeworlds of the participants that engendered a certain set of opinions and perspectives about the phenomena of the clinical encounter and the 4-Hour Rule; for example, their motivation to participate in the research may have been a desire to share negative experiences with the rule that do not represent the more general experience of other doctors in the same circumstances.

- *Grounding in examples:* In the positivist paradigm four participants may be viewed, with a critical lens, as inadequate from which to draw valid findings and conclusions. Validation in quantitative terms is usually contingent on both adequate, large numbers of participants and some *a priori* estimate for a magnitude of change between intervention and no intervention. While this may represent a limitation from the empirical vantage point, it is only through misapprehension of, or scepticism for, the purpose and logic of qualitative exploratory research that the discrete number of participants might be considered an issue. However, in the context of grounding this inquiry in examples, four participants may represent a minimum set of examples within a phenomenological inquiry from which to draw data for analysis. As discussed in *Chapter 3: Methodology*, some experienced researchers in qualitative methods recommend as few as six participants for phenomenological inquiry.

- *Providing credibility checks:* Credibility checks enable readers to assess to what extent the data generated from fieldwork represent the people and phenomena to which they relate. For ethical reasons related to maintaining participant anonymity, and in one instance a changed work relationship with one of the participants, it was inappropriate to return the First Order Constructs to the four participants for checking. Their

feedback may have affected some of the emphases within the Constructs with downstream impact on Second Order Constructs and imaginative variations. The alternative of supervisor review and checking within a larger alternative group of physicians was undertaken as a remedy.

- *Coherence:* Care was taken to faithfully present the descriptive units of meaning of participants as the basis for First Order Constructs, and later the elaboration and enrichment in Second Order Constructs. Nonetheless, the weaving together of a critical realist ontological paradigm with a phenomenological descriptive methodology may present epistemological challenges to coherence between the data from interviews and the findings presented in *Chapter 4* and *Chapter 5*. As this was a theory-building inquiry, there were few examples, though there were some, of the integration of critical realist and phenomenological discourse. This thesis represents a somewhat novel approach that may, however, on critical reflection be found to have gaps or inconsistency between methods and ontology that affect overall coherence.

- *Accomplishing general versus specific research tasks:* This important criterion bears some similarity to the question of generalisability in quantitative research. If the task of the research was to specify knowledge about a specific phenomenon among a select group of people, the researcher ought to have gathered data and analysed it with appropriate reference to the specific task. However, as in this case, the task was to make general inference about the impact of the 4-Hour Rule on doctors' perceptions. Therefore, an assessment of quality turns on how well the research design and method generates data capable of making general inference. Again, the small 'n' design may have been inadequate in generating a large enough data set to capture the richness of phenomenal experience to ascertain the key generalising elements of the experience. However, phenomenological essentialism has informed the complete trajectory of design, data generation and analysis such that "it is the results that are general, not the participants themselves".[749]

- *Resonating with readers:* Though couched in terms of publication by scholarly journals and other media outlets, the concept of resonance with the reader is fundamental to phenomenology. The final state of the presentation of findings is called the 'vocative' and should bring the researcher's encounter with the data and what it means as close to the reader as possible as an experience shared. There is evidence from the validation

[749] M Englander, "The Interview: Data Collection in Descriptive Phenomenological Human Scientific Research", *J Phenom Psych* 43 (2012): 17.

exercise with a group of doctors who did not participate in the research that the findings, at least conceptually, resonated with their lived experience of the clinical encounter and the impact of the 4-Hour Rule on the patient-doctor relationship. How well the imaginative variations in Second Order Constructs bring the reader close to the sense of discovery and uncertainty of the process of epoché and bracketing may have been compromised by a necessary attention to the formalism and structures of thesis writing.

In terms of saturation, the depth of participants' experience with the 4-Hour Rule was, in my estimation, evidenced by the data as being adequate for analysis in response to the research question. A limitation may have been imposed, however, from the fact of my own medical practice as one who is also already engaged with the phenomena and also the influence my experience may have had on the descriptions provided by participants. There were several instances in which participants indicated to me an assumption of specialist knowledge about the effect of the 4-Hour Rule as an assumed shared experience. Though I consciously worked to avoid resting on a response characterised in this manner, it remains possible that the descriptions of experience were affected by our shared professional histories. However, given the strengths of emotion and levels of disclosure of personal histories in the interviews, there may be some indication that collegiality enhanced disclosure, as a function of a sense of safety in being understood and not judged.

7.3 Future directions

The push towards greater systems thinking in health services research from the WHO and IOM in the US is an important step towards potentially greater value research in complex health-related phenomena. However, applying systems thinking models and theory will not always generate meaningful ways of understanding the nature of the structure of relations in the complexity of living systems. The risk in systems thinking is attempting to simplify or 'decomplexify' a real phenomenon to a system model, thus breaking the structure of relations, rendering the model incomplete.

Instead, future research might build on the momentum towards less reductive research strategies to embrace the full complexity of the system of health-care. This requires multidisciplinary, interdisciplinary, multi-theory approaches that are unlikely to reside in any one health-care organisation. Health services research that engages with complexity requires collaboration between hospitals, universities and other research institutes to bring

together a suite of expertise and experience, including patient experience, in order to potentially recast the theoretical basis for the structure of relations of clinical encounters and hospitals.

Clinical communication skills training is, as suggested by the participants, a vital part of quality improvement in terms of patient experience and some health outcomes. While the quality of communicative exchange is already appreciated for its critical role in achieving the objective outcomes of the medical interview, the lack of explicit language theory from the research on improving clinical communication skills may be limiting some of the benefits. The possibility that enthymemes and other less formal argument styles occur with significant frequency within the clinical encounter may be worthy of further investigation and characterisation. While achieving an adequate data set is essential for the performance of biomedical activity, the building of rapport, trust and shared understanding may rest on less objective outcomes. Participants in this inquiry were all very aware of the importance of clinical communication skills, but there was some suggestion that speaking with patients, as opposed to gathering biomedical data, may still be under-developed in some doctors.

Given the focus of inquiry was on theory building, there is wide scope for future research to test hypotheses that arise from the theory of the structure of relations within the Emergency Department as posited in this thesis, and to consider how such theories inform research and evaluation of the response and adaptation to administrative interventions.

Some researchers have shown promising outcomes in health-care from a focus on measuring and responding to patient suffering, which this inquiry suggests is one of the irreducible elements of the reason and purpose for Emergency Departments. The function of suffering in terms of its effects on physicians is another important direction in which future research in suffering might take.

Strategies for including more comprehensive and regular evaluation of the impact of complex interventions in hospitals and Emergency Departments on health-care workers also appear to be a valuable additional research direction. The impact of complex interventions on the clinical encounter is an immediate phenomenon, the consequences of which may not be illuminated in quantitative data relating to categorical health outcomes such as morbidity and mortality. The effect of interventions may, in significant ways, depend on how health-care workers make meaning of the interventions in daily

practice. In the case of the 4-Hour Rule, despite a few inquiries by health departments and medical associations, little research evidence is available to indicate how the strongly negative views of some physicians and other health-care workers towards the rule has impacted on the clinical encounter. This may be a significant gap in knowledge given how central the clinical encounter appears to be to the efficient and effective productivity of hospitals, which is a major concern for both health funders and policy makers.

7.4 Conclusions

A phenomenological inquiry into the impact of the administrative intervention of the 4-Hour Rule in Australian public hospitals, and the perception of its effects on the patient-doctor relationship from the doctors' perspectives, has yielded findings which both support existing knowledge about the impacts, and provide some new insight into understanding how complex interventions may interact with people and work environments in hospital Emergency Departments.

In respect of what was already known about the impact of the NEAT on Emergency Departments and the doctors working within them, this phenomenological inquiry provides some additional evidence and argument for the conclusions that:

1. The NEAT is, as intended, materially changing the manner in which doctors work within the hospital setting.

2. The NEAT requires a greater priority for senior-clinician-led approaches to patient care in the Emergency Department.

3. The NEAT has, in the opinion of medical practitioners, adversely affected the nature of training and professional development within the Emergency Department. It is less likely a place in which inexperienced junior doctors can acquire a range of procedural skills under supervision of senior colleagues. For both junior and senior staff there is significant pressure trying to find the time necessary for continuing professional development activities during working hours.

4. Doctors view the performance of the 4-Hour Rule as sometimes contrary to the best interests of patients. They recognise the possibility that good outcomes are achievable within a 4-hour window. However, they lament that in individual circumstances enforcement of the target, which is supposedly designed to reduce the risk of

morbidity and mortality for patients, has the effect of instead rendering, in their estimations, unsafe outcomes.

5. Doctors highlight a tendency for hospital systems and personnel to become reactive to time-based performance as patients approach the 'breach' of the 4-Hour Rule, including moving patients to extended care environments, inappropriate ward referrals or unsafe discharge home.

In addition to these specific findings, the significantly original findings of this inquiry relate more directly to the questions of how relational dynamics, performance, and medical practitioner perceptions are impacted by administrative intervention.

In order to make sense of the multitude of factors affecting the myriad actors and agencies in a typical departmental environment, it was necessary to relinquish a positivist and deterministic mechanical model as an explanation of the dynamic interactions. Instead, an exploratory approach was assumed, which aimed to better characterise the holism of the worldview of human encounter in the hospital context. An exploratory approach was further suggested by the dearth of literature that could be used to support any significant *a priori* causal or associative relationships in a quantitative sense, to then support characterisation of the ontological frame of the clinical encounter.

The result is, tentatively, a more complete understanding of the purpose, function and uniqueness of the patient-doctor relationship, recast as a phenomenon of complexity in a manifold structure of relations with its own realness. Though perhaps sharing some of the dynamics attributable to many interpersonal relationships, the patient-doctor relationship is created by an intentionality that is unique to its actors and origins. To reiterate, the descriptive phenomenological inquiry using empirical phenomenological methods yielded five candidate eidetic elements of clinical encounter: Self-Other Responsibility; Suffering; Caseness; Uncertainty with Inimitability; and Neighbour-Love.

In the phenomenological sense, intentionality of the clinical encounter is, in the first instance, because of our essential responsibility to another, bound in the Lévinasian knot of responsibility of self-Other, and the calling to be responsible for the Other that is essential in Otherness. Self-Other responsibility is also, however, a relationship that acknowledges the suffering of the Other as one's own, a hopeless and helpless suffering. In this sense, it is thought that humans have always called for, and been called to, relationship in service of suffering.

The patient-doctor relationship exists as a function of a long history of human endeavour to relieve suffering. However, it is only within recent centuries that the power of the empirical scientific method, and its organisation and codification in the corpus of *iatros,* that the emergence of what might be called a dualism of medical practice appeared. This dualism pertains to a biomedical dimension, in which the accumulation and application of technical knowledge and technology serve to restore bodily disorder, and an ethical 'care' dimension, perhaps even of love, in which disease and illness are made sense of in the totality of the lived experience of a person through a subjective knot of self-Other responsibility, and Neighbour-love. In positing that suffering is a function of entropy, this thesis has concluded that both the ethical and biomedical dimensions of health-care in the emergency room share a deep common purpose in arresting the excessive rate of entropy production. Both 'houses' of practice, by virtue of entropy, have unique and shared mechanisms through which humans can recruit and transform free energy to achieve the universal goal of the arrest of rapid entropic increase.

Though certainly not presented as *the* ultimate outcome criterion, the idea that health-care, at its core, is designed to deliver the recovery and restoration of function, and the survival of the people who require it, is not particularly controversial from a deductive positivist perspective.[750] [751] However, this view does not fully capture what is essential about the intentionality of the patient or doctor in the acute stress of the Emergency Department. One of the chief conclusions in this inquiry is that in the Emergency Department setting something much more immediate than survival is sought: the relief of suffering. No matter which way this possibility was observed, whether behaviourally in drives and instincts, or through the phenomenological lens of Lévinasian responsibility, suffering appeared to be the true experiential provocation to action for both patient and doctor.

Suffering appears to be essential to the encounter when it is understood that suffering at the level of the organism itself is a final common pathway for the expression of a state of increasing rates of entropy production. Increased rates of entropy are posited to arise from a failure of the sophisticated and powerful homeostatic mechanisms of the organism. This failure signals a need for urgent input of external energies to arrest ongoing deterioration. The possibility that the living substances of humans have the

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[750] A Donabedian, "Evaluating the Quality of Medical Care", *The Milbank Memorial Fund Quarterly* 44, no. 3 (1966): 164.

[751] Productivity Commission, *Report on Government Services 2015 Volume E: Health.* (Canberra: Australian Government, 2015).

unique conditions of a thermodynamic biological set-point some way from equilibrium supports a logical consequence that irreversible energetic processes within our living substances are coupled, in the manner of Onsager's reciprocal relations and Prigogine's dissipative structures. This arrangement results in an outcome where our biological system can maintain a least dissipative energy state via the metabolism of free energy that approximates the entropy of our existence. Hence, when rates of entropy production rise, such as in disease and trauma, a reciprocal increase in the dissipative rate of energy loss poses a real and immediate threat to life, and must be matched or exceeded by metabolism of free energy.

Suffering signals a potential for the loss of life, and human carbon-based logic systems are exquisitely well designed to measure and respond to changes indicating increased entropy production. When people confront suffering in the Lévinasian ethical knot of responsibility for the Other, they are compelled to respond, both for the life of the one who suffers, but also in recognition that the Other's suffering *is their suffering*. In direct response to the natural law imposed by a thermodynamic reality, reciprocal relations and biological dissipative structures make it possible to recruit and inject non-random intentional energy into increasingly disorganising systems (such as the suffering patient) to arrest and even reverse the entropic forces. In the clinical encounter, the human beingness of a doctor is a critical part of the recruited intentional energy for the patient.

The phenomenological findings suggest that if the clinical encounter is framed in this more fundamental way, in terms of suffering and entropy, it becomes clearer what it is that Emergency Departments and their employees aim to achieve: the reduction of rates of entropic increase in suffering patients. When their goal is characterised from this perspective, no longer are time, triage category, diagnosis, workload, cognitive biases, fatigue or any other of the myriad objects within and around the clinical encounter described as 'independent variables' to be controlled for in experimental inquiries.

Instead it can be hypothesised that these objects are continuous dimensional expressions of a complex manifold phase-space in which the total entropic function must be optimised through solutions that are sensitive to the couplings of irreversible processes. There may be a range of optimal solutions available for any given clinical encounter, dependent on where and how stabilising energies are recruited and invested into the system of encounter. Many 'variables' are more essentially 'controller' aspects of a complex system by which trajectories of clinical encounter might be 'nudged' towards

preferred 'attractor orbits', from which steady-state is re-established, and recovery and survival flow. Perhaps even optimal performance is not required for effective Emergency Department performance, given the theoretical indicators and examples in nature of the effectiveness of meliorising strategies in complex systems. Much more theoretical work is required to understand the optimisation-meliorisation dynamics of complex biological systems before models are developed.

Many solutions are strongly dependent on another of the potential essences of clinical encounter, that of caseness. In thermodynamics, caseness can be considered an expression of the quality of the critical entropic component of information. How well caseness is defined by the doctor, and to a degree how well the general set of caseness is actually able to indicate the micro-states of the patient, will affect the predictability of the outcomes of the choices of interventions and the patient's response to the energetic investments to reduce their suffering.

From these foundations, an outline of how dissipative structures and reciprocal relations respond to changes in entropy within the human organism was drawn. As one example, human interoception of the activation of stress responses to localised entropic increases provides a theoretical bridge between the affective and emotional experience of the lifeworld of the self, and its embodiment in the physical substance of our bodies. Emotional responses have been demonstrated mathematically and conceptually as a energy flow thermodynamic function coupled to force energetics of receptor-ligand activity of cells and organs.[752] These emotional and higher cognitive functions can operate as 'top down' controllers of the responses of reflex systems in bodies that are attempting to drive physical systems back towards their steady-state. As a consequence, memories, thoughts and intentions, arising from mind and consciousness, have access directly to physical systems within bodies that can provide the work for re-establishing steady-state and relieving suffering. From the other direction, activity within physico-physiological systems measured as an entropic function of stress might directly impact, bottom-up, on one's state of mind and also be used to drive (through work) phase transitions within the living substances of bodies, tending to move the whole organism towards least dissipative states favouring equanimous emotional being and, thus, relief from suffering.[753]

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[752] Pakhomov and Sudin, "Thermodynamic View on Decision-Making Process", 449-463.

[753] Bienertová-Vašků, et al, "Calculating Stress: From Entropy", e0146667.

International organisations and past researchers have been calling for new ways of conceptualising and researching health systems, including the use of systems thinking with respect to complex interventions like administrative and policy interventions. This endeavour may yet still not encompass an adequate recognition of the implications of complexity in health services. Morin calls for recognition that complexity is of minimal value if it only results in an attempt at simplification of that complexity in modelling and research design.[754] Instead, one is challenged to embrace complex solutions to complex challenges, much as Schön has argued in his work on professional performance.

This inquiry has drawn a long bow between ontology, epistemology and methodology, as the inquiry aimed to align all three in a critical realist perspective. By positing inadequate evidence for the ontological assumptions and deterministic characterisations of Emergency Departments and patient overcrowding, the lines of inquiry were forced to return to a descriptive enterprise focused on theory generation rather than the hypothesis-testing of a positivist experimental paradigm. Imprudent co-opting of model-generating quasi-quantitative research methodologies was avoided in favour of a more appropriate qualitative methodology that returned to questions of the true nature of the phenomenon of clinical encounter as the 'keystone' of hospital Emergency Departments. I have threaded a tentative connection of logic between complexity theory, descriptive phenomenology and empirical phenomenological research methods to characterise an objective complexity of the structure and function of relations in the clinical encounter and hospital, in which deterministic causality is invalidated by the evidence of the 'whole of the parts in the parts of the whole' reacting and adapting as one open system to the larger universe in which it exists.

Complexity cannot be reduced without a potential loss of knowledge. In the universe of entropy, in which information itself may ultimately define order and disorder, knowledge is a precious and essential antidote to the inevitability of a tendency to decay. More of the wrong kind of knowledge, though, only increases the potential for fragmentation of meaningful information. Health services research may be in need of a paradigm shift, beyond a drift to systems thinking, to the full constitutive implications of health-care as a complex phenomenon.

The 4-Hour Rule has changed the practice of medicine in Australian Emergency Departments, in turn changing the physicians entrusted to deliver health-care within

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[754] Morin, "Restricted Complexity, General Complexity", 6.

them. Yet doctors' experiences and observations of the consequences of a complex intervention such as the 4-Hour Rule have rarely been the object of rigorous inquiry. This is a critical gap given the relationship between physicians' perceptions of their working life, its impact on their performance, and the consequences of this for patient outcomes. The clinical encounter appears to remain the keystone of care and the space in which outcomes are most strongly situated. Given the structure of relations and the causal powers embodied within the *role* of the doctor (as opposed to the individual subject who fulfils it), rigorous and systematic evaluation of the impact on physicians of administrative interventions such as the 4-Hour Rule is not a reinforcement of an anachronistic social power paradigm. It is instead an essential and critical pathway to understanding the impact of complex interventions within the complexity of health-care in hospitals.

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APPENDICES

Appendix 1: NEAT Research Summary

Appendix 2: NEAT Research Using Theoretical Models

Appendix 3: NEAT Clinician Impact Research

Appendix 4: Health Services Research and Systems Theory Research

Appendix 5: Ethics Approval — St Vincent's Health Service

Appendix 6: Ethics Approval — Western Sydney University

Appendix 7: Plain Language Participant's Information Sheet

Appendix 8: Semi-structured Interview Questions Schedule

Appendix 9: Phenomenological Research in Health Services Research

APPENDIX 1: NATIONAL EMERGENCY ACCESS TARGET RESEARCH SUMMARY

Excerpt from Ovid MEDLINE Database searched 12/12/2017

1. Use of medical emergency call data as a marker of quality of emergency department care in the post-National Emergency Access Target era. Westacott L; Graves J; Khatun M; Burke J.
Australian Health Review. , 2017 Nov 14

2. Multidisciplinary evaluation of an emergency department nurse navigator role: A mixed methods study. Jessup M; Fulbrook P; Kinnear FB.
Australian Critical Care. , 2017 Sep 20.

3. Effect of the 4-h target on time-to-ECG. Hughes JA; Cabilan CJ; Young C; Staib A.
Australian Health Review. , 2017 May 09.

4. Effect of the 4-h target on time-to-analgesia in an Australian emergency department: a pilot retrospective observational study. Hughes JA; Cabilan CJ; Staib A.
Australian Health Review. 41(2):185-191, 2017 May.

5. Impact of emergency department discharge stream short stay unit performance and hospital bed occupancy rates on access and patient flow measures: A single site study. Shetty AL; Teh C; Vukasovic M; Joyce S; Vaghasiya MR; Forero R. *Emergency Medicine Australasia. 29(4):407-414, 2017 Aug.*

6. Analysing the emergency department patient journey: Discovery of bottlenecks to emergency department patient flow. Khanna S; Boyle J; Good N; Bell A; Lind J.
Emergency Medicine Australasia. 29(1):18-23, 2017 Feb.

7. Presentations by ambulance under the NSW Mental Health Act to an emergency department with a 24-hour mental health team. Skopek MA; Francis JL.
Australasian Psychiatry. 24(5):445-8, 2016 Oct.

8. Two Hour Evaluation and Referral Model for Shorter Turnaround Times in the emergency department. Burke JA; Greenslade J; Chabrowska J; Greenslade K; Jones S; Montana J; Bell A; O'Connor A.
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9. Two Hour Evaluation and Referral Model for Shorter Turnaround Times in the emergency department. Burke JA; Greenslade J; Chabrowska J; Greenslade K; Jones S; Montana J; Bell A; O'Connor A.
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10. The National Emergency Access Target performance and all that!!. Cameron P; Mitra B; Smit D.
Emergency Medicine Australasia. 29(3):260-261, 2017 06.

11. Implementation and evaluation of a 'Navigator' role to improve emergency department throughput. Fulbrook P; Jessup M; Kinnear F.
Australasian Emergency Nursing Journal. 20(3):114-121, 2017 Aug.

12. 'Care in a chair' - The impact of an overcrowded Emergency Department on the time to treatment and length of stay of self-presenting patients with abdominal pain. Smith B; Bouchoucha S; Watt E. *International emergency nursing. 29:9-14, 2016 Nov.*

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25. Mid-term NEAT review: analysing the improvements in hospital ED performance. Khanna S; Boyle J; Good N; Lind J. Studies in Health Technology & Informatics. 204:54-9, 2014.

26. Synthesised geriatric assessment in the Emergency Department setting: is it NEAT?. Nguyen A; Straney L; Cameron P; Lowthian J. Australian Health Review. 38(4): 370-6, 2014 Sep.

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APPENDIX 2: NATIONAL EMERGENCY ACCESS TARGET RESEARCH USING THEORETICAL MODELS

Excerpt from Ovid MEDLINE Database searched 12/12/2017

1. Use of medical emergency call data as a marker of quality of emergency department care in the post-National Emergency Access Target era. Westacott L; Graves J; Khatun M; Burke J. *Australian Health Review. , 2017 Nov 14*

2. Multidisciplinary evaluation of an emergency department nurse navigator role: A mixed methods study. Jessup M; Fulbrook P; Kinnear FB. *Australian Critical Care. , 2017 Sep 20.*

3. Impact of emergency department discharge stream short stay unit performance and hospital bed occupancy rates on access and patient flowmeasures: A single site study. Shetty AL; Teh C; Vukasovic M; Joyce S; Vaghasiya MR; Forero R. *Emergency Medicine Australasia. 29(4):407-414, 2017 Aug.*

4. Two Hour Evaluation and Referral Model for Shorter Turnaround Times in the emergency department. Burke JA; Greenslade J; Chabrowska J; Greenslade K; Jones S; Montana J; Bell A; O'Connor A. Emergency Medicine Australasia. 29(3):315-323, 2017 Jun.

5. Implementation and evaluation of a 'Navigator' role to improve emergency department throughput. Fulbrook P; Jessup M; Kinnear F. Australasian Emergency Nursing Journal. 20(3):114-121, 2017 Aug.

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7. Redesigning emergency patient flow with timely quality care at the Alfred. Lowthian J; Curtis A; Straney L; McKimm A; Keogh M; Stripp A. Emergency Medicine Australasia. 27(1):35-41, 2015 Feb.

8. Strength in unity: the power of redesign to align the hospital team. Bell A; Cochrane A; Courtice S; Flanigan K; Mathur M; Wilckens D. Australian Health Review. 38(3):271-7, 2014 Jun.

9. Improvement in emergency department length of stay using an early senior medical assessment and streaming model of care: A cohort study. Asha SE; Ajami A. Emergency Medicine Australasia. 25(5):445-51, 2013 Oct.

APPENDIX 3: NATIONAL EMERGENCY ACCESS TARGET CLINICIAN IMPACT RESEARCH

Excerpt from Ovid MEDLINE Database Searched 12/12/2017

1. Multidisciplinary evaluation of an emergency department nurse navigator role: A mixed methods study. Jessup M; Fulbrook P; Kinnear FB. *Australian Critical Care. , 2017 Sep 20.*

2. The National Emergency Access Target performance and all that!!. Cameron P; Mitra B; Smit D. *Emergency Medicine Australasia. 29(3):260-261, 2017 06.*

3. Implementation and evaluation of a 'Navigator' role to improve emergency department throughput. Fulbrook P; Jessup M; Kinnear F. *Australasian Emergency Nursing Journal. 20(3):114-121, 2017 Aug.*

4. Report on the 4-h rule and National Emergency Access Target (NEAT) in Australia: time to review. [Review] Staib A; Sullivan C; Griffin B; Bell A; Scott I. *Australian Health Review. 40(3):319-23, 2016 Jun.*

5. The National Emergency Access Target (NEAT) and the 4-hour rule: time to review the target. Sullivan C; Staib A; Khanna S; Good NM; Boyle J; Cattell R; Heiniger L; Griffin BR; Bell AJ; Lind J; Scott IA. *Medical Journal of Australia. 204(9):354, 2016 May 16.*

6. Real time shift reporting by emergency physicians predicts overall ED performance. Husain N; Bein KJ; Green TC; Veillard AS; Dinh MM. *Emergency Medicine Journal. 32(2):130-3, 2015 Feb.*

7. Is National Emergency Access Target dumbing down emergency physicians?. Green D. Emergency Medicine Australasia. 26(3):305-7, 2014 Jun.

8. Strength in unity: the power of redesign to align the hospital team. Bell A; Cochrane A; Courtice S; Flanigan K; Mathur M; Wilckens D. *Australian Health Review. 38(3):271-7, 2014 Jun.*

APPENDIX 4: HEALTH SERVICES RESEARCH AND SYSTEMS THEORY

Excerpt from Ovid MEDLINE Database searched 14/12/2017

1. [Realist evaluation for implementation research]. [French] Dupin CM. Soins; La Revue de Reference Infirmiere. 62(814):52-55, 2017 Apr.

2. A Multiple Case Study of Mental Health Interventions in Middle Income Countries: Considering the Science of Delivery. Kidd SA; Madan A; Rallabandi S; Cole DC; Muskat E; Raja S; Wiljer D; Aylward D; McKenzie K. PLoS ONE [Electronic Resource]. 11(3):e0152083, 2016.

3. Person-centred health care: a critical assessment of current and emerging research approaches. [Review] Martin CM; Felix-Bortolotti M. Journal of Evaluation in Clinical Practice. 20(6):1056-64, 2014 Dec.

4. The application of systems thinking in health: why use systems thinking?. Peters DH. Health Research Policy & Systems. 12:51, 2014 Aug 26.

5. A qualitative systematic review of studies using the normalization process theory to research implementation processes. [Review] McEvoy R; Ballini L; Maltoni S; O'Donnell CA; Mair FS; Macfarlane A. Implementation Science. 9:2, 2014 Jan 02.

6. Concluding remarks. Goes J. Advances in Health Care Management. 15:213-5, 2013.

7. Commentary on "Health care organizations as complex systems: new perspectives on design and management" by Reuben R. McDaniel, Dean J. Driebe, and Holly Jordan Lanham. Anderson RA. Advances in Health Care Management. 15:27-36, 2013.

8. Health care organizations as complex systems: new perspectives on design and management. McDaniel RR Jr; Driebe DJ; Lanham HJ. Advances in Health Care Management. 15:3-26, 2013.

9. Studying complex interventions: reflections from the FEMHealth project on evaluating fee exemption policies in West Africa and Morocco. Marchal B; Van Belle S; De Brouwere V; Witter S. BMC Health Services Research. 13:469, 2013 Nov 08.

10. Health systems innovation: addressing the dynamics of multilayered 'complex bundles' of knowledge. Martin CM. Journal of Evaluation in Clinical Practice. 19(6):1085-6, 2013 Dec.

APPENDIX 5: ETHICS APPROVAL — ST VINCENT'S HEALTH SERVICE

St Vincent's Hospital

A facility of St Vincent's & Mater Health Sydney

St Vincent's Hospital Sydney Ltd
ABN 77 054 038 872
390 Victoria Street
Darlinghurst NSW 2010
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19 November 2015

Dr Kieran Le Plastrier
School of Business
University of Western Sydney
15 Bertha Road
Cremorne NSW 2090

Dear Kieran,

SVH File Number: 14/244
Project Title: Performance Landscapes of the Clinical Encounter: How are the dynamics of the patient-doctor relationship impacted by managerial interventions including "The Four Hour Rule" targets in emergency departments of Australian Public Hospitals? HREC Reference Number: LNR/14/SVH/380

Thank you for submitting a request for an amendment dated **4 November 2015** to the above project. This was considered by the St Vincent's Hospital HREC at its Executive meeting held on **17 November 2015.** This HREC has been accredited by NSW Ministry of Health as a Lead HREC under the model for single ethical and scientific review and Certified by the NHMRC under the National model for Harmonisation of Multicentre Ethical Review (HoMER). This lead HREC is constituted and operates in accordance with the National Health and Medical Research Council's *National Statement on Ethical Conduct in Human Research* and the *CPMP/ICH Note for Guidance on Good Clinical Practice*. No HREC members with a conflict of interest were present for review of this project.

I am pleased to advise that the following was approved at the meeting:

- Method of Recruitment – General Advertisement in Medical Publications.

This amendment has also been reviewed by the Research Governance Officer at St Vincent's Hospital. Further authorisation of the above approved documents is not required for any site that has the Research Governance conducted by St Vincent's Hospital Research Office. Implementation of this amendment can now proceed.

You are reminded that this letter constitutes ongoing ETHICAL and SCIENTIFIC review only. For multi-site projects reviewed by the HREC after 1 July 2007 a copy of this letter must be forwarded to all Principal Investigators at every site approved by SVH HREC for submission to the relevant Research Governance Officer along with a copy of the approved documents prior to implementation of the amendment.

Please note that only an electronic copy of this letter will be provided, if you require the original signed letter please contact the Research Office and we will be happy to provide this.

Should you have any queries about your project please contact the Research Office, Tel: (02) 8382-2075, email SVHS.Research@svha.org.au. The HREC Terms of Reference, Standard Operating Procedures, *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice* and standard forms are available on the Research Office website found at: https://svhs.org.au/home/research-education/research-office

Yours sincerely,

Sarah Charlton
HREC Executive Officer
St Vincent's Hospital Research Office
Level 6, de Lacy Building

cc: Lesley Kuhn, Heidi Boss

TRIM REF: D/2015/63878

APPENDIX 6: ETHICS APPROVAL — WESTERN SYDNEY UNIVERSITY

Locked Bag 1797
Penrith NSW 2751 Australia
Office of Research Services

ORS Reference: H10908

HUMAN RESEARCH ETHICS COMMITTEE

24 November 2014

Doctor Lesley Kuhn
School of Business

Dear Lesley,

I wish to formally advise you that the Human Research Ethics Committee has noted the external HREC approval of your research titled: “Performance Landscapes of the Clinical Encounter: How are the dynamics of the patient-doctor relationship impacted by managerial interventions including `The Four Hour Rule¿ targets in emergency departments of Australian Public Hospitals?“ under the UWS number H10908.

Conditions of Approval

1. Please advise UWS HREC of amendments approved by the Administering HREC.
2. Please advise UWS HREC of any serious or unexpected adverse events reported to the Administering HREC
3. As the Administering HREC has approved the protocol until 10 November 2019 the UWS record will close after that date unless we are advised that the Administering HREC has approved an extension.
4. Please provide a copy of the Final report to UWS HREC.

Please quote the registration number and title as indicated above in the subject line on all future correspondence related to this project. All correspondence should be sent to the email address humanethics@uws.edu.au as this email address is closely monitored.

Regards

Human Ethics Officer on behalf of UWS HREC
humanethics@uws.edu.au
Tel: 4736 02229, Ext: 2229

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University of Western Sydney
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Participant Information Sheet (General)

Project Title: Performance Landscapes of the Clinical Encounter: How are the dynamics of the patient-doctor relationship impacted by managerial interventions including 'The Four Hour Rule' targets in emergency departments of Australian Public Hospitals?

Project Summary: This study explores how the patient-doctor relationship may be impacted by managerial and administrative directives that shape the conditions within which health care is delivered in public hospitals. This study will focus on the views of medical practitioners working in our public hospitals. The emphasis is on how doctors believe the interpersonal dynamics of their encounter with a patient might be affected by conditions such as 'The Four Hour Rule' targets for public hospital emergency departments. The study will also consider if there is any impact from the ways in which the administration managing a hospital communicates and controls how directives are implemented.

My name is Dr Kieran Le Plastrier. I am a medical practitioner and practice mainly in the field of psychiatry, along with a role in a government-owned health service organisation. I am conducting this research as part of my PhD degree at the University of Western Sydney.

How is this study being paid for?
The study is part of a PhD project through the University of Western Sydney. No external funds have been accessed.

What will I be asked to do?
You will be asked to participate in a 90-minute semi-structured interview with the researcher. This interview will be audio recorded to a digital file so that it can be analysed, along with all the other interviews. It will not be possible to identify you from the interview recording or its transcript. Questions will be open-ended and will aim to engage your thinking, and elicit your thoughts, feelings, and behaviours as they relate to the patient-doctor relationship; the role and impact of hospital administration, and; your ideas about your performance and productivity as a doctor in public hospital service.

How much of my time will I need to give?
It is likely to require around 2 hours in total participation, on average. It is possible that the required time is somewhat more or less than 2 hours depending on your responses in the interview.

What specific benefits will I receive for participating?
There is now well established evidence that medical practitioners benefit from reflecting on how they perform as doctors in their day-to-day work. This interview will be an opportunity to think critically about how you and your patients might be affected by systems and processes over which you may feel you have little control. Doctors, on average, tend to have a high locus of internal control (that is that they believe that their self-directed actions are able to influence how events in the world unfold), and it can be beneficial to think about those aspects of the work environment in which you don't feel you have such high levels of control. It is possible that by thinking about these things you might imagine new ways of going

about your work that improve your overall performance and work satisfaction.

Will the study involve any discomfort for me? If so, what will you do to rectify it.
Because medicine is traditionally a hierarchical profession built on strong themes of collegiality and respect for authority and experience, there can sometimes be discomfort such as embarrassment or guilt when discussing your thoughts about why doctors might be more or less effective in their work. This could be particularly so if you are reflecting negatively on your own performance. It is also possible that when discussing your experiences with the patient-doctor relationship you will be reminded of encounters that bring up strong emotions. You should speak to the researcher if you have any concerns, and be reassured that there are processes in place to provide support if needed.

How do you intend on publishing the results.
All aspects of the study, including results, will be confidential and only the researcher and academic supervisors will have access to information on participants. Information that is identifiable will be stored separately from the digital audio files and analysis files so that it is not possible to reconstruct identities. The academic supervisors for this research are Dr Lesley Kuhn (Principal Supervisor and Senior Lecture with the School of Business, UWS) Prof Paul Komesaroff (Faculty of Medicine, Monash University) and Prof George Lafferty (University of Western Sydney).

The findings of the research will be published in a thesis to be presented to the University Of Western Sydney for the purpose of conferment of a degree as a Doctor of Philosophy (PhD).

*Please note that the minimum retention period for data collection is five years.

Can I withdraw from the study?
Participation is entirely voluntary: you are not obliged to be involved and - if you do participate - you can withdraw at any time without giving any reason and without any consequences. Any data collected will be destroyed should you withdraw your consent to participate.

Can I tell other people about the study?
Yes, you can tell other people about the study by providing them with the chief investigator's contact details. They can contact the chief investigator to discuss their participation in the research project and obtain an information sheet.

What if I require further information?
When you have read this information, I will discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact me
Chief Investigator - Dr Kieran Le Plastrier 0428 727 22, or
Principal Supervisor - Dr Lesley Kuhn on (02) 9685 9689.

What if I have a complaint?
This study has been approved by the University of Western Sydney Human Research Ethics Committee. The Approval number is XXXXXX

If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on Tel +61 2 4736 0229 Fax +61 2 4736 0013 or email humanethics@uws.edu.au.

Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

If you agree to participate in this study, you may be asked to sign the Participant Consent Form.

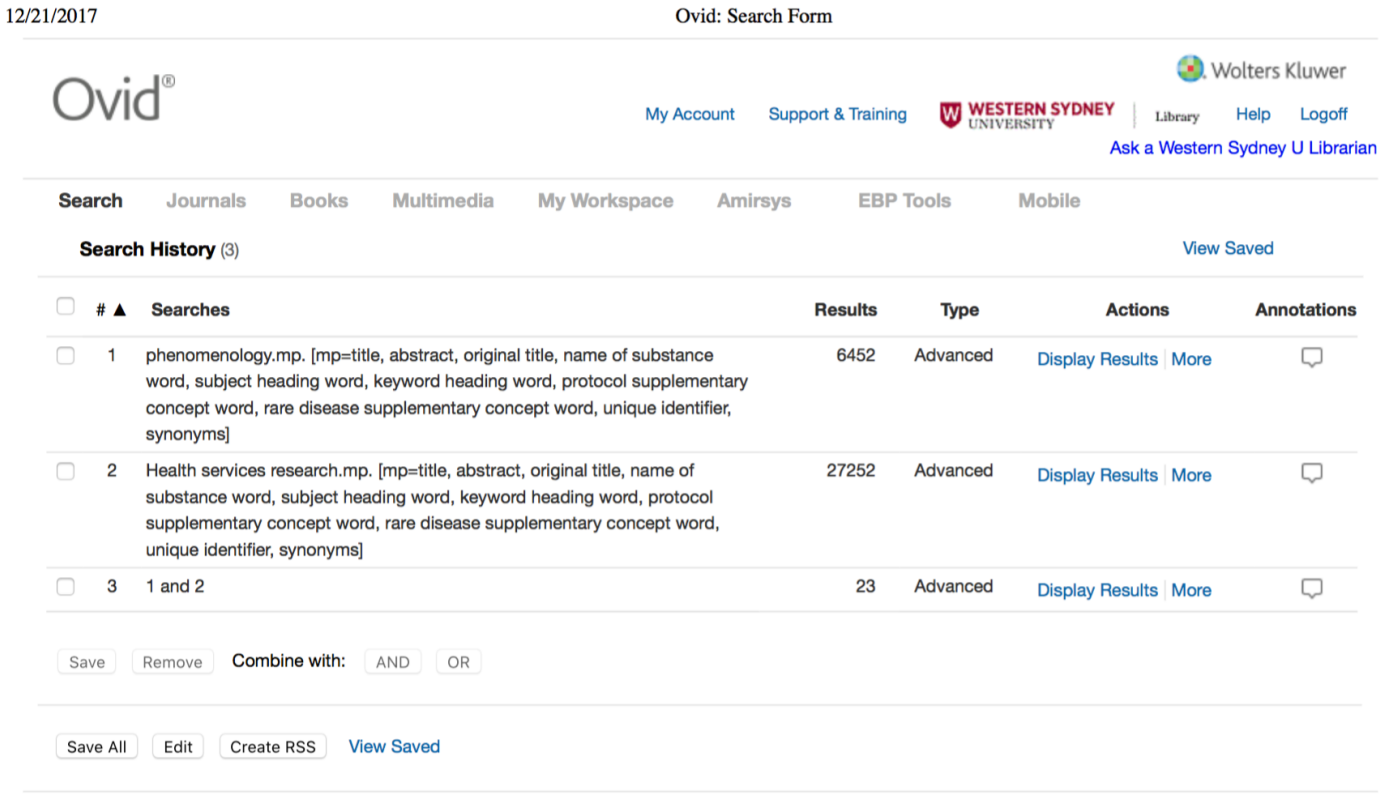
APPENDIX 8: SEMI-STRUCTURED INTERVIEW QUESTIONS SCHEDULE

- The Patient-Doctor Relationship
  - What happens between you and a patient when you do your work?
  - Can you describe any formative experiences that influence your understanding of what, how and why, you approach the patient in your typical manner on a day-to-day basis?
    - Are they 'cumulative' or 'episodic' or something else?
  - Can you describe some of the contextual factors that might influence this encounter?
  - How does this encounter fit into health-care systems as you experience them?

- Clinical Performance
  - In your opinion, what are the fundamentals of good clinical performance?
  - What impacts on your performance day-to-day?
  - How does the profession influence the performance of its practitioners?
  - How do you measure your performance? Is there an ideal way to measure your performance?
  - How do you approach performance issues, good and bad, in the colleagues around you?
  - Have you considered how stress, appraisal and coping; professionalism; ethics, and; medical culture influence your clinical experience? What are the reasons for your responses?

- Productivity
  - How would you define the productivity of public hospitals you have worked or trained in?
  - Who controls productivity in public hospitals?
  - Are you aware of the 'Four-hour Rule' in public hospital settings?
  - Do you identify yourself as part of the Four-hour Rule pathway in your workplace, and what is the rationale for your answer?
  - Can you identify any impact of the rule on your assessment of your performance day-to-day in the workplace? Has it had any impact on your experience of the patient doctor relationship?

APPENDIX 9: PHENOMENOLOGY RESEARCH IN HEALTH SERVICES RESEARCH



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